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Research on Sahaja Yoga Meditation: a quasi-experimental Approach of its Effect on Environmental Attitudes, Academic Anxiety, and Performance of Secondary School Students

Manju Gundumogula

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Thesis work submitted in the fulfillment of the degree of
**DOCTOR OF PHILOSOPHY in Sociology, Lorraine Laboratory of Social
Sciences (2L2S), SLTC Doctoral School, University of Lorraine, France**
Presented by Mrs Manju GUNDUMOGULA

**Research on Sahaja Yoga Meditation: A quasi-experimental
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Under the Guidance of **Jean Marie SECA**
Professor of sociology, University of Lorraine, 2L2S

Composition of the jury

Mr Rajeev CHOUDHARY, Professor in Physical Education, University Pandit Ravi Shankar Sukla (Raipur: India), School of Studies in Physical Education (examiner)

Mrs Mar GRIERA, Associate Professor of sociology, Universitat Autònoma de Barcelona, Department of sociology (examiner)

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Mr Klaus HELLING, Professor in Business Administration and Environmental Management, University of Applied Sciences of Trier, Hochschule Trier (President of the Jury)

Mr Lilian NEGURA, Professor of social sciences, University of Ottawa, School of Social Work (reporter)

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Abstract

The growing appreciation of meditation, yoga and alternative methods for mental, emotional and physical health is a sociological phenomenon. The philosophy of meditation indicates a personal development on various dimensions that can be understood as a true sustainable personality with skills, abilities and virtues. Achieving a thoughtless meditative state is a prerequisite for this. This assumption is not met by many methods, which may be the cause for controversial views about meditation in the scientific discourse. The current study indicates a general positive personal development on a large and representative sample (n=400) of school students in an Indian socio-cultural environment by the intervention with Sahaja Yoga Meditation. Quantitative results of ANCOVA showed significant positive effects on Environmental Attitudes (DV1-EA; 10.81% positive change), levels of Academic Anxiety (DV2-AA; 19.78 % drop), and Academic Performance (DV3-AP 4.08%, improvement). The qualitative data from student diaries and teacher feedback give an insight into the causality they have drawn - that was the experience of the meditative state of thoughtlessness through the intervention with Sahaja Yoga Meditation, which was given to them on a daily basis for half a year. The personally felt experience was essential for their change. They felt connected to nature and to themselves, many began with introspection and social reflection and changed their social behavior, which was valued by their social environment and which was previously not able to bring about this development. Through the experiment the students developed into more self-confident personalities, they improved their social behavior, they started school projects for the environment, they found more interest and sincerity in their studies, for some their health improved and much more. The socio-cultural setting in India is seen as contributing to the acceptance, appreciation and smooth application of this method in the school environment.

Sustainable development in all aspects is the main task and challenge for societies today and in the near future. Economies and societies will have to develop new approaches to joint production, consumption and coexistence, e.g., to address migration for economic and ecological reasons or the distribution of wealth on a national and international level. Technological development is very rapid and the tolerated adaptation times are becoming shorter. People feel pressured and insecure by the increasing demands and the growing competition in the world of work; especially in India which has the second largest population in the world. Here the competition begins at a very young age and gets tougher and tougher on the educational path. The ancient Indian educational system used meditation and yoga to balance students while encouraging the development of their full potential. Yoga and meditation have become very popular around the world over the past 50 years. In India, the Ministry of Health and the Ministry of Science and Technology are promoting the use and research of these methods.

The aim of this doctoral thesis is to highlight the effects of meditation on secondary school students in India. Particular attention is paid to factors that affect the common good, such as attitudes towards the environment, and variables that affect personal development, such as school anxiety level and academic performance. In addition to the personal development, the social change triggered by meditation will be examined. Empirical data

have been constructed quantitatively, by means of a quasi-experimental study, consequently realized in organizational context. Additional qualitative information was used for the evaluation.

Practice of Sahaja Yoga Meditation is the independent variable; the three dependent variables in the quantitative study are: Environmental Attitudes (DV1-EA), Academic Anxiety indicator (DV2-AP) and Academic Performance (DV3-AP). Pre- and post-tests were performed using standard scales for Academic Anxiety and Environmental Attitudes. The Academic Performance was measured using the average grade of the students' school reports. The analysis of quantitative data was carried using the advanced ANCOVA method. Qualitative data was drawn from the diaries of the meditation experiences of the participating students and the teachers' feedback on their observations.

The test population came from ten state high schools in the East Godavari district in the state of Andhra Pradesh, India. A total of 400 students (200 male and 200 female) was randomly selected and assigned to the Experimental and Control Groups of 200 students each. A structured, guided Sahaja Yoga Meditation program: one 45-minute session every day, six days a week, for half a year (July to December 2018), served as an intervention for the Experimental Group. The intervention was directed by regular schoolteachers of the respected schools who additionally have years of experience with the practice of Sahaja Yoga Meditation. Sahaja Yoga Meditation (SYM) is an important representative of the traditional approach of Silent Mind Meditation.

The statistical analysis found significant differences, between the Experimental and Control Groups, for the three dependent variables. The intervention with Sahaja Yoga Meditation showed so significant positive effects on Environmental Attitudes (DV1-EA; 10.81% positive change), levels of Academic Anxiety (DV2-AA; 19.78 % drop), and Academic Performance (DV3-AP 4.08%, improvement). Based on the observed results, the following interpretative hypothesis is put forward: *meditation that follows the traditional concept of meditation as a thought-free state (Sahaja Yoga Meditation) outperforms other methods that do not follow the original concept of thoughtless meditation.* The Testimonies of the students showed in a very impressive way the multitude of changes that they observed on themselves. These changes were also formulated by their parents, teachers, and friends. For example, they lost fears, became more confident, showed better behavior, and they have increased the number of their friends. In addition, at some schools they initiated sustainability programs and projects in which they integrated students from the whole school. The positively changed behavior of the Experimental Group (EG) exerted a positive social influence on the Control Group (CG) which showed significant positive developments also. The extent of the influence was shown in the statistically significant improvement in the values of the Control Group (DV1-EA 0.98%, DV2-AA 3.76%, DV3-AP 0.39%). The influence factor of the EG on the CG was therefore approx. 10% in relation to environmental attitudes and study performance and approx. 20% in relation to the reduction in academic anxiety.

Key Words: Meditation, Environmental Attitude, Academic Anxiety, Academic Performance, Social Change, Sahaja Yoga Meditation, Secondary school students, Education in India

Résumé

L'appréciation croissante de la méditation, du yoga et des méthodes alternatives pour la santé mentale, émotionnelle et physique est un phénomène sociologique. La philosophie de la méditation indique un développement personnel sur diverses dimensions qui peut être compris comme une véritable personnalité durable avec des compétences, des capacités et des vertus. Atteindre un état méditatif irréfléchi est une condition préalable à cela. Cette hypothèse n'est pas satisfaite par de nombreuses méthodes, ce qui peut être la cause de points de vue controversés sur la méditation dans le discours scientifique. L'étude actuelle indique un développement personnel positif général sur un échantillon large et représentatif (n=400) d'élèves dans un environnement socio-culturel indien par l'intervention avec Sahaja Yoga Meditation. Les résultats quantitatifs de l'ANCOVA ont montré des effets positifs significatifs sur les attitudes environnementales (DV1-EA ; 10,81 % de changement positif), les niveaux d'anxiété scolaire (DV2-AA ; baisse de 19,78 %) et les performances scolaires (DV3-AP 4,08 %, amélioration). Les données qualitatives des journaux d'étudiants et les commentaires des enseignants donnent un aperçu de la causalité qu'ils ont établie - c'était l'expérience de l'état méditatif d'inconscience à travers l'intervention avec Sahaja Yoga Meditation, qui leur a été donnée quotidiennement pendant six mois. L'expérience ressentie personnellement était l'essentiel pour leur changement. Ils se sentaient connectés à la nature et à eux-mêmes, beaucoup ont commencé par l'introspection et la réflexion sociale et ont changé leur comportement social, qui était valorisé par leur environnement social et qui n'était pas en mesure auparavant d'apporter ce développement. Grâce à l'expérience, les étudiants sont devenus des personnalités plus sûres d'eux, ils ont amélioré leur comportement social, ils ont lancé des projets scolaires pour l'environnement, ils ont trouvé plus d'intérêt et de sincérité dans leurs études, pour certains leur santé s'est améliorée et bien plus encore. Le cadre socioculturel de l'Inde est considéré comme contribuant à l'acceptation, à l'appréciation et à l'application harmonieuse de cette méthode dans l'environnement scolaire.

Le développement durable, sous tous ses aspects, est la principale tâche et le défi majeur des sociétés d'aujourd'hui et de demain. Les économies et les sociétés devront développer de nouvelles approches en matière de production, de consommation et de coexistence commune, par exemple, pour faire face aux migrations de nature économique et écologique ou pour arbitrer la répartition des richesses au niveau national et international. Le développement technologique est très rapide et les temps d'adaptation tolérés sont de plus en plus courts. Les gens se sentent sous pression et insécurisés par les exigences croissantes et la concurrence de plus en plus forte, régnant dans le monde du travail, surtout en Inde, second pays le plus peuplé du globe. Dans ce contexte, la concurrence commence dès le plus jeune âge et elle devient de plus en plus rude tout le long du cours du parcours éducatif. L'ancien système d'éducation indien utilisait la méditation et le yoga dans le but de favoriser l'équilibre des étudiants tout en soutenant le développement de leur plein potentiel. Le yoga et la méditation sont devenus très populaires dans le monde entier au cours des cinquante dernières années. En Inde, le

ministère de la Santé et le ministère des Sciences et de la Technologie promeuvent les pratiques et la recherche sur ces méthodes.

L'objectif de cette thèse de doctorat est de mettre en évidence les effets de la méditation sur les élèves de l'enseignement secondaire, en Inde. Une attention particulière est accordée aux facteurs qui affectent le bien commun, tels que les attitudes envers l'environnement, et à ceux qui influencent le développement personnel, tels que le niveau d'anxiété scolaire et les performances académiques. En plus de l'épanouissement personnel, on examinera aussi le *changement social* déclenché par la méditation. Les données empiriques ont été construites quantitativement, au moyen d'une étude quasi expérimentale, réalisée par conséquent dans un contexte organisationnel. Des informations qualitatives supplémentaires ont été utilisées pour l'évaluation.

La pratique de la méditation Sahaja Yoga est la variable indépendante ; les trois variables dépendantes de l'étude quantitative sont les attitudes environnementales (DV1-EA), l'indicateur d'anxiété académique (DV2-AP) et la performance académique (DV3-AP). Les pré et post-tests ont été effectués à l'aide d'échelles standard pour l'anxiété académique et les attitudes environnementales. La performance académique a été mesurée en utilisant la note moyenne des bulletins scolaires des étudiants. L'analyse des données quantitatives a été effectuée par des méthodes statistiques multivariées à l'aide du logiciel Statistical packages for the social sciences (SPSS) et de la méthode avancée ANCOVA. Les données qualitatives ont été tirées de journaux des expériences de méditation, tenus par des élèves participants aux séances, et des commentaires d'enseignants sur leurs observations.

La population testée provenait de dix écoles secondaires publiques du district d'East Godavari dans l'État d'Andhra Pradesh, en Inde. 400 étudiants (200 hommes et 200 femmes) ont été sélectionnés et répartis de manière aléatoire dans les groupes expérimental et contrôle de 200 étudiants chacun. Un programme structuré et guidé de méditation Sahaja Yoga : une session de 45 minutes par jour, six jours par semaine, pendant six mois pendant une demi-année (de juillet à décembre 2018), a servi d'intervention dans le groupe expérimental. L'intervention a été dirigée par des enseignants qualifiés qui ont également cumulé des années d'expérience dans la pratique de la méditation Sahaja Yoga. La méditation Sahaja Yoga est une tendance significative de l'approche traditionnelle de la méditation du Silent Mind.

L'analyse statistique a révélé des différences significatives, entre le groupe expérimental et celui contrôle, pour les trois variables dépendantes. L'intervention par la méditation Sahaja Yoga a donc provoqué des effets positifs significatifs sur les attitudes environnementales (DV1-EA ; 10,81% de changement positif), les niveaux d'anxiété académique (DV2-AA ; 19,78% de baisse), et de performance académique (DV3-AP 4,08%, amélioration). L'hypothèse interprétative suivante est émise sur la base des résultats observés : *la méditation qui suit le concept traditionnel de la méditation comme un état sans pensée (méditation Sahaja Yoga) surpasse les autres méthodes qui ne suivent pas le concept original de la méditation sans pensée*. Les témoignages des élèves ont montré de manière très impressionnante la multitude de changements qu'ils ont observés sur eux-mêmes. Ces changements ont également été énoncés par leurs parents, enseignants et amis. Par exemple, ils ont perdu leurs peurs. Ils sont devenus plus confiants. Ils ont montré un meilleur comportement et ils disent avoir augmenté le nombre de leurs amis. En outre, dans certaines écoles, ils ont lancé des programmes et

des projets de développement durable dans lesquels ils ont intégré des élèves de toute l'école. Le changement de comportement positif du groupe expérimental (GE) a exercé une influence sociale positive sur le groupe de contrôle (GC), qui a donc également connu une évolution positive. L'ampleur de l'influence a été démontrée par l'amélioration statistiquement significative des valeurs du groupe de contrôle (DV1-EA 0,98%, DV2-AA 3,76%, DV3-AP 0,39%). Le facteur d'influence du GE sur le GC a été donc d'environ 10% en ce qui concerne les attitudes environnementales et les performances scolaires et d'environ 20% en ce qui concerne la réduction de l'anxiété scolaire. Certaines des écoles participantes ont été tellement impressionnées par les résultats qu'elles ont continué le programme de méditation Sahaja Yoga dans l'ensemble de l'établissement. Plusieurs autres écoles ont également pris connaissance de ces effets et ont lancé des programmes de méditation dans leurs écoles. Les résultats de cette recherche peuvent aider les professionnels de l'éducation, les administrateurs, les concepteurs de programmes d'études et les décideurs à décider si la méditation doit ou non être officiellement incluse dans le programme d'études.

Mots clés: Méditation, Attitude environnementale, Anxiété scolaire, Performance scolaire, Changement social, Méditation Sahaja Yoga, Élèves du secondaire, Éducation en Inde.

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Finally, I would like to thank my husband, who helped and supported me in successfully completing this research project.

Letter of acceptance from the Rector



Nancy, le 12 janvier 2016.

PM/MD/EB/2016-01/N°455

Monsieur Jean-Marie SECA
Laboratoire 2L2S

Monsieur,

Vous avez sollicité l'Université afin d'obtenir l'autorisation pour Madame Mandjula GUNDMOGOULA de rédiger sa thèse en anglais.

Après avoir examiné votre dossier en collaboration avec l'Ecole Doctorale Fernand-Braudel, j'ai l'honneur de vous faire connaître que j'ai décidé d'accepter votre demande, sous condition qu'un résumé substantiel de 5 à 10 pages soit rédigé en français.

Veillez agréer, Monsieur, l'assurance de mes sincères salutations.

Pour le Président et par délégation,
Le Vice-Président du Conseil Scientifique,

Frédéric VILLERAS



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Introduction

The world we live in is full of challenges. And we learned that we either have to arrange ourselves with the non-wishful circumstances and the challenges will remain or we have to find solutions for them. So, either our mind has to be changed or the world outside has to be changed - both may seem to be very difficult.

But history shows that, no matter how hard it was, there always has been either an inner adjustment or an outer solution or a combination of both. And history also shows, that sometimes there have been such dramatic problems that empires collapsed or whole cultures got extinguished. Sometimes the problems were natural disasters or environmental changes, but most of the times the problems were manmade. Many of the manmade problems appear because someone wants something that somebody else possess or, someone wants to do something that the other one does not like.

The manmade solutions haven't changed since prehistoric times: run, fight or make friends. So, either there is a distance that divides, there is a harmful clash, or there is some kind of social contact or even social contract that brings the parties together. Again, we find, the first two approaches, run or fight, aim for outer solutions and the last one, make friends, aims for an inner adjustment.

What makes our times different to the times before? The technology is so advanced, the world is so connected¹, knowledge is available and free to access like it was never before. This has implications. The first two solution options, run or fight, seem to lead to satisfying outcomes any more. On a large scale, for example country-specific, it does not seem possible to evade the presence or influence of undesirable countries; economies are interwoven and dependent, everything is run by computers that can be hacked and cause crucial damage to the infrastructure. The fight response can lead to complete destruction,

¹ Globalization is often referred to, as a new phenomenon. But international exchange across large distances has always been the case. For example, already in the antique and before there were huge tradelines e.g., between Europe and Asia, as well as in the whole Mediterranean area. There have been the times of the great migrations, etc. At the end of the 19th century there was an increase in international integration in the economy, with trade and cash flows and migration of people (Mahajan, 2006, p.142).

in case of nuclear weapons or a highly superior enemy. Other fights are not fightable and not winnable – many of the actual and possible threats to peace are asymmetrical threats, meaning that an enemy, even if obviously inferior, can still be an existential threat for a more powerful country, example through terrorist attacks or through cyber-attacks. The best solution always was and still is, is to make friends. If this is easier or more complicated nowadays, we cannot say. Like everything relative, it depends.

What really sets our time apart from the times before is the time factor, the speed with which change is taking place. Technological change is exponential and combinatorial and is progressing at ever faster doubling rates. As a consequence, this changes the way we produce, work and life. And this results in social changes with a before unimaginable speed².

And it is also the first time in history that humanity as a whole, with its technological lifestyle, can and does influence the global environment and climate in a way that leads to major external adaptation problems. Some doubt the man-made influence on the climate, but climate change with more frequent extreme weather conditions is causing major problems in many countries on an unprecedented scale. Solution approaches contain the search for technical solutions (the outer adjustment) and the spread of existing knowledge that gives the mind new input (the inner adjustment) in the hope that this causes a behavioral change (outer adjustment). But the results of the past forty years show that knowledge or information is not sufficient to change people's minds and their behavior in direction of sustainable behavior.

² "Humanity will change more in the next 20 years than in the previous 300 years. Human beings often extrapolate the future from the present, or even the past. The assumption is that whatever worked well for us up to now should in some slightly improved shape or form also serve us nicely in the future. Yet the new reality is that because of the increased impact of exponential and combinatorial technological changes [...] the future is actually very unlikely to be an extension of the present. Rather, it is certain to be utterly different – because the framework and the underlying logic has changed. [...] We are at the inflection point of an exponential curve in many fields of science and technology, a point where the doubling from each measurement period to the next is becoming vastly more significant (see Moore's Law). This exponential pace of development is now evident everywhere including in fields such as deep learning, genetics, material sciences and manufacturing" (Leonhard, 2016, p. 1)

In a networked world, with its rapidly changing technologies, with its many and rapid social changes, with the need for intercultural exchange, the approach of “making friends / social contracts” needs to be promoted. Because environmental issues require a lot of international cooperation, be it CO2 emissions, international aid in the event of natural disasters such as drought, fire or floods, or be it to protect the fish stocks of the oceans from overfishing, to name just a few examples. It is therefore important to find methods that, on the one hand, support the essential "make friends / social contracts" approach and, on the other hand, bring about internal change more effectively than the "more knowledge" approach, which has mainly been used up to now.

It is the theme of this thesis to examine an in this context not considered approach, that is most probably as old as the common solution approaches run, fight and make friends. It is commonly considered to be a method with deep impact on the inner adjustment and by those familiar to the discipline also considered to influence the outer world through social effects³.

Meditation is the technique that has long been known to bring about inner change, a peaceful nature, and a free and balanced mind that performs better. It connects the inside world with the outside world. It brings peace and harmony. At the same time, it is doubted and denied that meditation brings these effects. Nevertheless, meditation practices are enjoying increasing popularity in practice and research. Everyone seems to have an opinion about meditation, but very few have personal experience with it and knowledge is rather limited.

The Sustainable Development Goals call for global social change. The world is perceived with unprecedented global challenges such as climate change, inequality gaps within and between countries, with the resulting social conflicts, social movements and emigration / immigration movements to challenging global health problems such as the Covid pandemic. All of these challenges are seen as a great interweaving of economic,

³ A point necessary for the probably most wanted and desired solution approach mentioned before “make friends”.

technological and social factors and structures. They are understood to be solvable only by a global society.

Every individual has to go through changes in order to adapt to different environmental influences. With increasing globalization and networking, there are no longer isolated, small and protected local niches in which individuals can isolate themselves and develop separately. Competition is fast global and relentless. In 1762, Jean-Jacques Rousseau spoke of the need for a social contract in order to found a community in a state that could cope with the problems of the time. In times of global problems, a global contract is needed.

It is widely believed that many of the problems were caused by the humans themselves. Often self-interest dominates and the common good is neglected in favor of one's own gain. Individuals cannot or do not want to assess the consequences of their actions far-reaching enough. In order to meet the great global challenges, many smaller individual steps are necessary, which require a change in each individual: The individual interest groups have to jump beyond their own shadow and approach one another, make compromises, give up their own small advantage for the greater common good. The interests of the weak and disadvantaged must be given greater consideration, and their voices and proposed solutions must be heard and respected equally. Global warming, air pollution, environmental pollution, energy supply, food supply, large migratory movements, resource distribution are just some of the global challenges that can only be mastered by the global community. And yet they require a change in the individual.

Some may say that the vast majority of people will always behave selfishly and be limited to short term perspectives. But there are many examples of people who strive for higher values and for whom the well-being of others is more important than their own. People whose actions are determined by values and ideals, such as B. Abraham Lincoln, Martin Luther King or Mahatma Gandhi. These people can be driving sources for a positive social change to a society that can master the global challenges.

The human mind or psyche consists not only of rational knowledge, but also of emotions, intuitive feelings and other factors. Different experiences can change our mind. The outer world affects a person's inner world. An overwhelming part of our attention is directed to

the outside world, and we primarily respond to the outside world. There is ample evidence that when we begin to observe and experience our inner world, processes are triggered that change our minds and trigger positive self-development. A positive development of an individual influences the environment of this person. The more people develop positively, the more positively society develops. The sum of the individual developments leads to an incremental social transformation. From the Indian point of view, yoga and meditation are beneficial ways and methods for promoting personal and social development.

A generally considered promising approach to promote substantial change in the society is to impart the main elements into the education system. We have seen big changes in the education systems in the last decades. The basic front-of-class teaching with memorization of fact knowledge as premier goal has been opened up to more integrated styles that want to train skills and soft-skills like group lessons, where groups of pupils work together on a topic and give a presentation to the class at the end or project work where pupils or classes work on a real project like a school kiosk, which supposed to teach social skills team work, organizational skills, complex thinking, *etc.* While these concepts have been integrated in European schools widely, the Indian school system is still dominated by the front-class teaching. Traditional Indian systems like the Gurukula or Brahminical system laid much more emphasize on personality building than on fact knowledge memorization. These traditional education systems also included meditation practices as this should focus the attention, balance the students, and make them more aware of themselves and their connectedness with others and their surroundings. Personality building is coming back into the focus of education worldwide.

Human qualities like imagination, values, intuition, empathy, *etc.*, are seen as a main quality needed for future generation to compete in the job market against a growing automatization and computerizing, which outsources routine work to machines, robots, and computers. These qualities are also regarded as game changing skills to conquer the multitude challenges of sustainability (Frey and Osborne, 2017).

The major challenges of the world today are seen in climate change and equality questions in countries and between countries. These major tasks will globally and nationally result

in big social changes, and they will raise moral questions. The status quo is identified to be partly the cause for natural and social imbalances. In many sectors a desire for change is growing. It becomes visible that the status quo is questioned, and its acceptance is shrinking. Economic growth is the biggest achievement of the developed countries, the feeling grows that the wealth may have been bought by a decline of moral values and social health.

India is a big society and a developing country. It is in a transitional stage, struggling between economical aims and socio-cultural traditions, that are the heart and the soul of the Indian identity. It is struggling between an economic inferiority feeling and an affirmation of social moral superiority. India wants to maintain its social values and gain a sustainable economy in the biggest democracy on earth. India somehow feels it has resources that cannot only help India to achieve its goals but can be a helpful tool for other societies also to reach their goals and that can be a tool for a new sustainability on a global base.

For top-down approaches of change, the will for a change would necessarily come from those at the top, but as these are the profiteers of the status quo, change is unlikely to happen from them, be it country wise or internationally. Hence, a bottom-up approach is much more likely. As an individual change can bring a societal change, this research will focus on a micro level base and observe small changes through a tiny intervention. And this research will focus on those who are not much conditioned yet, who do not have a status quo and a fixed set of minds to defend, but who are open to the possibilities of the world and want to discover their potentials – the youth in the schools.

Sociology studies societies, societal change, and societal influences (amongst other aspects). This research work is to be understood as an interdisciplinary work covering fields of sociology, education, and the ancient discipline of meditation. It will observe and discuss the educational use of Sahaja Yoga Meditation classes and the sociological implications. The research was done in India, written in Germany under the guidance of a Professor from France – the world is getting smaller as we are growing together and learning from each other, benefitting from each other cultures.

Sustainable Development Goals: Call for a social change



Figure 1: "Earthrise" (NASA AS8-14-2383)

Source: Apollo 8 photograph of Earth taken from lunar orbit, December 1968.

A picture of the earth floating alone in the darkness of the universe is said to have made a big impact on the people's minds. The picture showed in Figure 1 made in 1968 during the first moon landing (Cosgrove, 1994). The public started to recognize earth as a vulnerable planet on which the entire mankind is living. The importance of this insight was conceived and started to grow within political leaders and the public, especially since the famous Club of Rome report "Limits to growth" (1972) outlined that the way societies function today could lead into the destruction of society itself, if not drastically change would be undertaken.

"Man throughout history has focused on growth—growth in population, standard of living, and geographical boundaries. But in the fixed space of the world, growth must in time give way to equilibrium. Malthus had postulated food supply as the ultimate limiting factor, but Professor Forrester suggests that pollution, crowding, and depletion of resources can play equally critical roles. Industrialization may be a more fundamental threat than population. Due to limitations of the environment, the entire world may not be able to rise to the standard of living that has been set as an example by the industrialized countries. Goals and aspirations of all countries must be drastically readjusted as growth and expansion give way to world equilibrium. (...) A stable enduring world equilibrium may require a combination of social, economic, and technical changes that include such counterintuitive policies

as reducing the present emphasis on food production and industrialization” (Forrester, 1971, Abstract).

The United Nations' Brundtland Report "Our Common Future", 1987 gave the first two definitions for Sustainable Development: "Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs." It made it even clearer: "In essence, sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional changes are all in harmony and enhance both current and future potential to meet human needs and aspirations" (Brundtland, 1987, p. 54). These definitions can be understood as normative ideas.

Since then, the United Nations have conducted many conferences and put on many programs regarding the concept of sustainability as the interconnection of social, economic, and environmental challenges. "Sustainability has become a central theme in the public sphere and a key concept in social change", also "a ubiquitous ideal for societal change, as well in the early industrialized countries of the global North as in some of the emerging economies of the South" (Neckel, 2017, p. 46). At the World Summit on Sustainable Development (WSSD), in 2002, the political leaders of the earth, declared their "responsibility to one another, to the greater community of life and to our children" (Johannesburg Declaration on Sustainable Development, para 6)⁴. It emphasizes the responsibility to (and not for) one another, which focuses the attention on the group of people to whom the duty exists.

In 2015, countries adopted for the 2030 Agenda a set of goals to end poverty, protect the planet and ensure prosperity (United Nations, 2015)⁵.

⁴ World Summit on Sustainable Development, & United Nations. (2003). *Johannesburg Declaration on Sustainable Development and Plan of Implementation of the World Summit on Sustainable Development: The final text of agreements negotiated by governments at the World Summit on Sustainable Development, 26 August-4 September 2002, Johannesburg, South Africa*. New York: United Nations Department of Public Information.

⁵ United Nations (2015). Sustainable Development Goals: 17 Goals to transform our world.



Figure 2: Sustainable Development Goals, UN 2016

(Source: UN Sustainable Development Platform)⁶

Figure 2 shows the 17 Sustainable Development Goals made by United Nations, viz., 1. No poverty, 2. Zero Hunger, 3. Good Health and Well-being, 4. Quality Education, 5. Gender Equality, 6. Clean Water and Sanitation, 7. Affordable and Clean Energy, 8. Decent Work and Economic Growth, 9. Industry, Innovation and Infrastructure, 10. Reduced Inequalities, 11. Sustainable Cities and Communities and 12. Responsible Consumption and Production. The United Nations Sustainable Development Summit in 2015 led to the formulation of these 17 larger goals⁷, the Sustainable Development Goals (SDGs), that the nations of the world want to reach till 2030.

Sustainability is today much more than a concept to keep the earth a livable planet, but a concept arising “from contemporary societies’ confrontation with the destructive exploitation of resources that are essential to their survival – whether the natural resources of the ecosystem, the economic resources of societal prosperity, the social resources of

⁶ Retrieved from <https://www.un.org/sustainabledevelopment/sustainable-development-goals-retired-link/>.

⁷ They are specified by sub targets and indicators. The SDGs aim to promote sustainable development on an economic, social and environmental dimension.

welfare and solidarity, or the subjective resources of work performance and the conduct of private life” (Neckel, 2017, p. 47).

Antonio Guterres, United Nations Secretary-General, pointed out the societal dimensions at the 2019 International Day of Peace:

“We need to make peace with nature and the fact that we are not making peace with nature and the fact that nature is angry is also creating more conflict among people. If you go to one region in Africa, the Sahel, south of the Sahara Desert, you will see that climate change is accelerating drought and desertification. You have farmers and herders that have been in harmony for centuries, but now because of the lack of water and the lack of pastures, the herders are forced to move more and more into the area where farmers have their own activities, and this is creating conflict between the two groups. [...] It helps the spread of terrorism in the Sahel [zone] becoming a threat to us all, because terrorism [is] today universal. [...] So, what is extremely important to see today is, that even if governments are still lacking political will, even if we are still unable to make full peace with nature, there is a huge hope in what the youth is doing all over the world. And the youth is clearly telling my generation that we need to change course and that we need to do it now. And it is saying it in a very strong way⁸”.

Despite continuous education attempts regarding environmental protection through the media, legislation, and regulations in many countries and political develop plans for poorer nations – the ecological, socio-economic and political problems have not become smaller globally. The gap between poor and rich is bigger than ever and growing faster and faster and the ecological situation is worsening faster and faster. In the preface of the book 'The globalization gap' Robert Isaak says, “extremes of wealth and deprivation have become so great that the stability of the global system is threatened” and “the failure to live up to the promise of opportunity as the rich get richer while poverty proliferates at home and in the least developed countries” (Isaak, 2005).

The modern society faces many problems today, because the modern man has turned out not to be the *homo oeconomicus* that he should be, the rational agent, that does whatever is in his self-interest, which leads in the long-term perspective to the best allocation of resources lead by the “invisible hand”, according to Adam Smith's economic theory, laid down in “An Inquiry into the Nature and Causes of the Wealth of Nations” (1776). Humans

⁸ Antonio Guterres, United Nations Secretary-General, Remarks to the International Day of Peace student observance, 20 September 2019, <https://www.un.org/sg/en/content/sg/speeches/2019-09-20/international-day-of-peace-student-observance-remarks>

may be *homo sociologicus* (Dahrendorf, 1964), agents that act in between norms, values, and expectations. Yet societies are far away from becoming populated by *homo oecologicus* (Meinberg, 1995), a model-like construct of a human being based on the orientation towards the compatible handling of the natural environment.

In “some of the questions central to sustainability, we are faced with a conundrum⁹. Although sustainability may have much in common with truth and justice – what it comprises is heavily influenced by value judgments and ethics – like these two, it has to be put into practice by imperfect human beings” (Bell & Morse, 2006, p.20).

The imperfections of the human being and the culmination of their actions are the cause for many major challenges and conflicts of today. António Guterres, United Nations Secretary-General, stated at the 2019 International Day of Peace: “We usually look at peace from the point of view of the conflicts between human beings. Peace is not only the absence of war; it is the creation of the conditions of harmony in the way people live with each other to allow for conflicts not to exist” (Guterres, 2019).

So, societies have to change to become more harmonious, harmony between the people and harmony with the environment to improve an all-together well being of mankind. “The wellbeing of humans and the wellbeing of the ecosystem are equally important, and a sustainable society needs to achieve both together” (Chhokar *et al.*, 2004, p. 270).

In the OECD¹⁰ countries, income inequality has risen, the incomes of the middle classes have stagnated, while the rich have become richer. On the global perspective, 20% of the world's population earn only 2% of the world income. The global economy has quintupled in the last 50 years, while around 60% of the global ecosystem has degraded. Global CO₂ emissions increased by 40% from 1990 (the base year of the Kyoto Protocol) to 2009. “Freeing ourselves from the imperative for growth would free up government to play its proper role in protecting ecological and social goods” (Jackson, 2009, p. 487)¹¹.

⁹ Conundrum is a problem or puzzle which is difficult or impossible to solve. - Collins Dictionary.

¹⁰ Organisation for Economic Co-operation and Development, an intergovernmental economic organisation with 38 member countries, mainly Europe, North America, Japan and Australia

¹¹ “Tim Jackson is professor of sustainable development at the University of Surrey, United Kingdom, and director of the Research Group on Lifestyles, Values and Environment (RESOLVE).

There is a division between the global west and the global east, between rich and poor. The “rich pull investment, skilled people, and resources away from poor areas and target them in winning regions” (Isaak, 2005, p. 43).

Economical think patterns are largely dominated by a particular way of thinking which on one hand is egoistical and on the other hand puts short-perspective gains higher than long-time perspectives of a prosperous business. This short-term earnings guidance is seen as counterproductive for long-term investors (Babcock & Williams, 2018). “Most financial crises are caused by a mix of stupidity and greed and recklessness and risk-taking and hope,” said Timothy Geithner¹² in 2012 (Beech, 2012). Economic scandals and financial crises call the teaching of business schools and the management education system into question, as they not only reveal the personal failure of some executives, but the extent of the failure indicates a structural problem in the educational approach. “The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood” stated John Maynard Keynes in *“The general theory of employment, interest and money”* (Keynes, 1953, p. 306). Research on business ethics teaching “reveal that managers are quite disappointed with the lack of improvement in the ethics of graduating students” (Sigurjonsson, 2015, p. 1). “Our theories and ideas have done much to strengthen the management practices that we are all now so loudly condemning” (Ghoshal, 2005, p. 75) concludes Sumantra Ghoshal from the London Business School and Advanced Institute of Management Research, UK, referring to free-market ideologies and assumptions regarding the 'homo oeconomicus' nature of mankind as a possible cause for such excesses (Ghoshal, 2005).

More, “we have adopted the 'scientific' approach of trying to discover patterns and laws and have replaced all notions of human intentionality with a firm belief in causal determinism for explaining all aspects of corporate performance. In effect, we have professed that business is reducible to a kind of physics in which even if individual

He is also economics commissioner on the United Kingdom's Sustainable Development Commission.” (Jackson, 2009, p. 490)

¹² Timothy Geithner was US Treasury Secretary in 2012 in the Obama administration, and former head of the New York Federal Reserve at the time of the financial crisis that followed the bankruptcy of the investment bank Lehmann Brothers during the Bush administration.

managers do play a role, it can be safely taken as determined by the economic, social and psychological laws that inevitably shape peoples' actions. Legitimized by a set of influential reports (such as Gordon & Howell, 1959) and supported by significant investments by, among others, the Ford Foundation (about \$250 million in 2003 dollars), these beliefs have become dominant in business schools in the United States and around the world (Clegg & Ross-Smith, 2003)" (Ghoshal, 2005, p. 77).

Focusing on the big patterns from a very large number of different actors seems to have led to a harmful neglect of the importance of the intentionality¹³ and the individual, who is mostly shortsighted and opportunistic in their adaptation.

An experimental study about social responsible behavior (SRB) in the field of corporate social responsibility (CSR) with four participating companies found that "traditional approaches to management education are not effective in changing decisions made regarding CSR dilemmas" (Schneider *et al.*, 2010, p.22). They found there is a key difference between social awareness and social consciousness. Social awareness can be created by community involvement processes or declarative knowledge transmission through CSR lectures or briefings. In additional simulations the 'know-how' to deal with ethical dilemma situations can be trained. But the implementation of the theoretical knowledge and the training depends on the 'know-why' question which is related to the personal traits and values (social consciousness). While "approaches aimed at personal development, such as training techniques of relaxation and mental silence meditation, even without explicit reference to CSR, show strong impact on changes in the decisions made (SRB)" (Schneider *et al.*, 2010, p.22). Mental silence was found to improve more sustainable business decisions, that are guided by a long-term perspective thinking. The same study found a decrease of self-interested manipulating behavior (Schneider *et al.*, 2010).

¹³ Referring to the different modes of explanation for different sciences by Elster (1983), Ghoshal synthesizes that for inorganic sciences, like physics, the causal mode of explanation is legitimate, Functional explanations play an important role in sciences that deal with organic matter, like biology, as the overarching casual theory of natural selection sees gives no role of intentionality to the process of evolution, driven by random errors and mutation. While for social sciences the intentional mode should be the main modus of explanation, as there is no comparatively strong general law as the law of natural selection (Ghoshal, 2005, p. 77).

Meditation and yoga practices are generally connected to mental, emotional, and physical well-being. In many societies “alternative” health promoting methods, lifestyle and philosophies are growing fast. A growing percentage of the population is looking for these different approaches, many originating from ancient India, in their search for a healthier and more balanced life that fulfills their higher needs. Sociologists find an “increasing popularity, legitimacy [...] that the holistic milieu is acquiring in contemporary western societies” (Griera & Clot-Garrell, 2015, p.19).

The National Center for Health Statistics (NCHS) monitors complementary health approaches in the USA. In the US 18 million adults and 927.000 children meditated in 2012 according to the National Center for Complementary and Integrative Health, approx. 21 million adults and 1.7 million children practiced (hatha) yoga (NIH News, 2015).

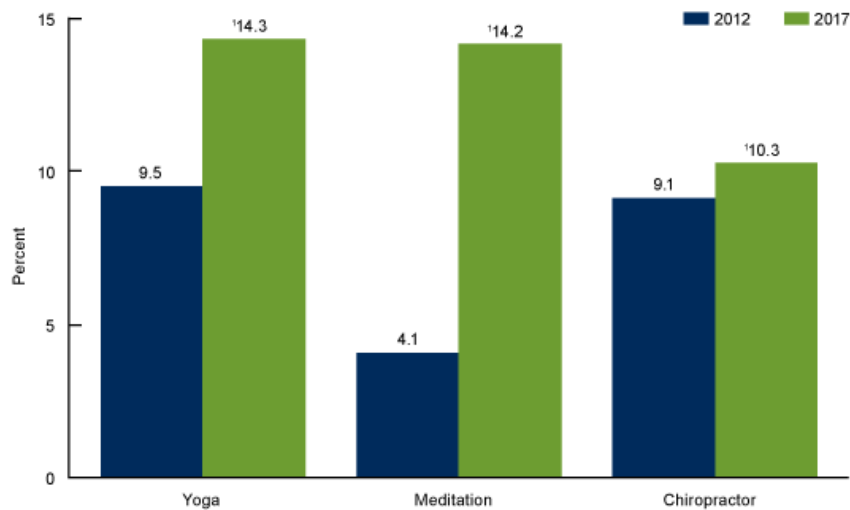


Figure 3: Sorted by year- Age-adjusted percentage of adults who used yoga, meditation, or a chiropractor during the past 12 months: United States, 2012 and 2017 (Graph: Clarke *et.al.*, 2018)

In the US, the adoption of meditation differs according to ethnics, age, and sex. The figure 3 shows the increase of meditation practitioners in percentage among U.S. adults from 4.1% in 2012 to 14.2% in 2017. The use of yoga and chiropractors increased also.

Regarding meditation in the US the age group between 45–64 (15.9%) is more meditating than those aged 18–44 and 65 and over (13.4% each). Women are more likely to do meditation (16.3%) than men (11.8) in the USA (Clarke *et al.*, 2018).

Research (Clarke *et al.*, 2018) shows that meditation practices are more popular in the non-Hispanic white ethnic (15.8%), than in the non-Hispanic black ethnic (13.5%) followed by the Hispanic ethnic (10.9%). The same is with yoga. Chiropractors are more popular with Hispanics than with non-Hispanic black while they are also most popular with non-Hispanic white.

It is undeniable that meditation has a market value. Therefore, it is to some degree regarded by agents more as a business than a spiritual or well-being practice. It is believed that globally between 200 and 500 million people meditate (Mindworks, n.d.). The US “meditation market” and the “mindfulness industries” made a revenue of approx. 1 billion US Dollar in 2015 according to industry researcher IBIS World (Wieczner, 2016). It is a little-researched, but strong growing niche market. The market is expected to nearly double from 1.21 billion US\$ in 2017 to 2.08 billion US\$ in 2022 with “services and products (as): Meditation Centers/Studios, Retreats, Books, Smartphone Apps, Websites, Online Courses, Employer programs, DVDs and CDs” (LaRosa, 2017). The market for the top 10 meditation apps rose by 52% from 2018 to \$ 195 million in 2019 (Perez, 2020).

“Findings suggest that most initiate yoga practice for exercise and stress relief, but for many [...] [the] reasons to continue to practice shift from physical motives to motives related to mental well-being and spirituality” (Park, *et al.*, 2014, p. 1). This “supports the view that yoga is a holistic body–mind– spirit practice” (*ibid* p. 9).

For the last four decades, the effects of meditation have been researching scientifically and researchers have succeeded to provide the evidence of the significant effects of meditation in medical, alternative medicine, neuroscience, psychological, physiological, education, social sciences, and other fields¹⁴. Meditation research is a highly controversial and many times emotionally charged topic, since belief systems that are deeply anchored

¹⁴ Discussed in detailed with the references in Literature Review section

seem to be challenged here. To the practitioners of meditation, the benefits are undeniable, otherwise they wouldn't practice it, while those who don't practice highly doubt the benefits. The available scientific research promotes this side or the other side. Both find appreciation in the theoretical part.

The Internet and smart phone usage changed the way cultures, trends and opinions circulate worldwide. Internet and social media displace TV, newspaper, and radio as the main source of information (Shearer, 2021). This has relevance for the objectivity of the news on one side. It has also large effects on the collective memory of societies, which was before closely interlinked with the news of the public available TV-Channels or newspapers. It showcased that civic activist groups that engage in societal change are organizing themselves via social media platforms (Bruns, *et al.*, 2013; Holston, 2014; Pospieszna & Galus, 2019). The younger generation is more likely to use smart phones than the older generation¹⁵. The spread of smart phones is intricately connected with the advancement of the economy and the educational level (Silver, 2019). Educating media competence is of high relevance¹⁶ (Kacinova, 2018).

¹⁵ The NFHS-5¹⁵, in 2019, gave insight into the internet usage in India. A difference can be found between urban (U) and rural (R) areas and between men (m) and female (f). According to NFHS-5 (2020), it became visible that there are large differences between urban and rural, male, and female internet usages also state wise there are huge differences. Overall, 42,6% (f) of women and 62,16% (m) of men ever used the internet. While the values differ between rural and urban India. In urban areas 56,81% of women and 73,76% of men had ever accessed the internet. In rural India 33.94 % of women and 55.6% of men had ever accessed the internet. State wise, the highest percentages of urban females that had ever used internet were found the highest in Goa (78.1%), Himachal Pradesh (78.9%), Kerala (64.9%), and Maharashtra (54.3%) and lowest in Andhra Pradesh (33.9%), Bihar (38.4%), Tripura (36.6%), Telangana (43.9%) and Gujarat (48.9%).

¹⁶ Also, it is not directly addressed in this research.

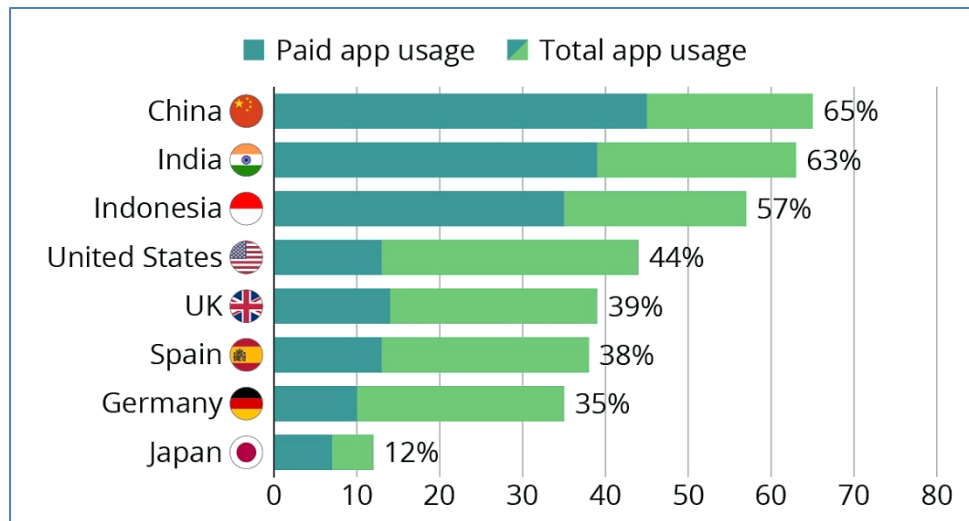


Figure 4: bar graph percentage of respondents who had used a health app in the past 12 months
 (Source: Statista Global Consumer Survey, 2020)

The bar graph (in Figure 4) shows the percentage of the surveyed respondents per country who had used health apps in the past 12 month¹⁷. The usage of health apps is most common in China and India (65% and 63%) and the readiness to pay for tracking health and wellness apps is here the highest. In Europe 22 – 40 percent of the respondents were using health apps, so it is less common in Europe. USA and Germany were the biggest freeloaders. Overall, the most used type of apps were nutrition apps. Popular were also tracking apps for heart rate, other bodily functions, and sleep tracking. “Indians were most likely to use meditation or mindfulness apps” (Statista, 2020)¹⁸.

Qualification shifts

The rapid technological development calls for a change in education to develop the qualities needed in fast and vast changing techno-economic environment and society. Now, we are in the beginning of the 4th Industrial Revolution. The advancements in

¹⁷ The statista global consumer survey conducted more than 1 million interviews in 56 countries (with 1,000 – 4,000 respondents per country) on consumption and media usage offline and online on more than 50 industries and topics.

¹⁸ Buchholz, K. Digital health, Where Health App Usage Is Most Common, 09.10.2020, Statista Global Consumer Survey, 2020 <https://www.statista.com/chart/23161/health-app-usage-country-comparison/>

technology, not only through automatization and digitization but also through the combination of these new emerging technologies will change our working and living environment fundamentally.

Klaus Schwab, founder and Executive Chairman of the World Economic Forum, who invented the term the 4th Industrial Revolution, explains:

“The First Industrial Revolution used water and steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. [...] [Now we are at the beginning of a Fourth Industrial Revolution, which is] characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres. [...] When compared with previous industrial revolutions, the Fourth is evolving at an exponential rather than a linear pace. [...] These changes herald the transformation of entire systems of production, management, and governance. The possibilities of billions of people connected by mobile devices, with unprecedented processing power, storage capacity, and access to knowledge, are unlimited. And these possibilities will be multiplied by emerging technology breakthroughs in fields such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage, and quantum computing” (Schwab, 2016).

Industrial and technological revolutions before having shown big changes in the occupational sector. Frey & Osborne quantified the recent technological progress and extrapolated it to the future of employment. It is estimated that through the 4th Industrial Revolution 47% of jobs in the U.S. will become automatable (Frey & Osborne, 2013). They find the “decline of employment in routine intensive occupations – i.e., occupations mainly consisting of tasks following well-defined procedures that can easily be performed by sophisticated algorithms” (Frey & Osborne, 2013, p. 3) well established. This does not necessarily mean that there will be a loss of nearly half the jobs, other jobs not yet known will be created. Therefore, the job profiles are going to change tremendously in the near future. Routine work that can be automatized will be shifted to robots or computers. For example, call centers could to a high degree be run by voice recognition software and routines that handle common customer problems. “The autonomous driverless cars, developed by Google, provide one example of how manual tasks in transport and logistics may soon be automated” (Frey & Osborne, 2013, p. 4). But jobs that require a high amount of more “human” skills like subjective reasoning, creativity, empathy, and other traits that are not computerizable will increase. The education system should adopt this insight and

diversify its strategies from only knowledge transfer to the fostering of skills, social qualities that are needed in team structures and value education. Such an education system can prepare the students to meet the challenges of the future.

“In the end, it all comes down to people and values. We need to shape a future that works for all of us by putting people first and empowering them. In its most pessimistic, dehumanized form, the Fourth Industrial Revolution may indeed have the potential to “robotize” humanity and thus to deprive us of our heart and soul, but as a complement to the best parts of human nature – creativity, empathy, stewardship – it can also lift humanity into a new collective and moral consciousness based on a shared sense of destiny. It is incumbent on us all to make sure the latter prevails” says Schwab (2016).

There is a growing agreement to the scientific consensus on anthropogenic (“manmade”) global warming (Cook, *et. al.*, 2013). The approaches trying to find solutions for SDG challenges show two basic directions.

One side of the spectrum sees the combinations of technical possibilities as solution-oriented, but existing mindsets, human inertness and diverted awareness are seen as hindrance. “Today’s decision-makers, however, are too often trapped in traditional, linear thinking, or too absorbed by the multiple crises demanding their attention, to think strategically about the forces of disruption and innovation shaping our future”, says Klaus Schwab, Founder and Executive Chairman of the World Economic Forum (Schwab, 2016).

On the other side of the spectrum, we find conservation or retreat approaches. The environmentalist movement is big in its diversity. Henry David Thoreau (1817–1862) was one of America's first philosopher-writer-activists and is still considered one of the most influential (Lallanilla, 2019). With his commitment to nature conservation and his endeavor to live in harmony with nature, he became a forerunner and inspirer of ecology as a science. In “Walden, or Life in the Woods” (1854) he described how a simple life in the forest, separate from 'civilized' society can be lived. Thoreau's philosophy of nonviolent resistance in “Resistance to Civil Government” (1849) influenced the likes of Leo Tolstoy, Mahatma Gandhi, and Martin Luther King. Existing mindsets, human inertness and diverted awareness located at the other side of the spectrum are also considered by this side of the spectrum to be the hindrance for a change.

India - A big society and a developing country

India is a developing country with a large society and it's socio-cultural background differs in large parts from the European and Western socio-cultural background, while at the same time there are also widespread closeness of parts of the societies.

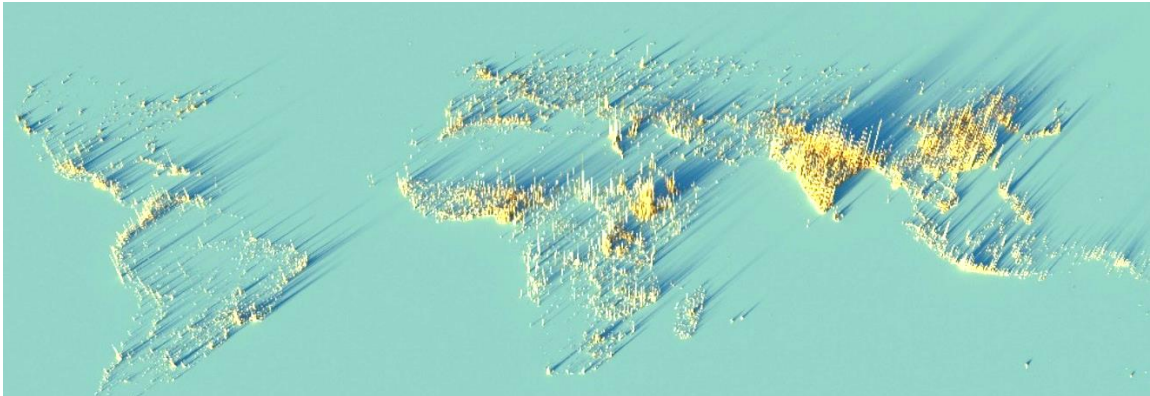


Figure 5: 3D map of Global Population Density
(Source: Wallach, 2020)¹⁹

The figure 5 shows a map of the global population density calculated from the data of the Global Human Settlement Layer (GHSL) of the European Commission. The height of the bars represents the number of people living in a 2km x 2km squares (Wallach, 2020). In the figure 5, the outlines of the continents can be clearly made out in case of South America, Africa, and Asia, which shows a high concentration of population in coastal areas in those regions. The climate change effects affect the whole world. Societies with highly dense populations in coastal regions will face large relocation movements if sea-levels rise (Bertana, 2019).

¹⁹ Wallach, O. (2020, Aug 21). *3D Mapping The Largest Population Density Centers*. <https://www.visualcapitalist.com/3d-mapping-the-worlds-largest-population-densities/> Figure 5 is created by Alasdair Rae using the EU's population density data and mapping tool Aerialod. Professor Alasdair Rae was awarded UK Statistic of the Year 2017 by the Royal Statistical Society for his work on land cover of the United Kingdom. <https://www.sheffield.ac.uk/staff/news/alistair-rae-1.752604>

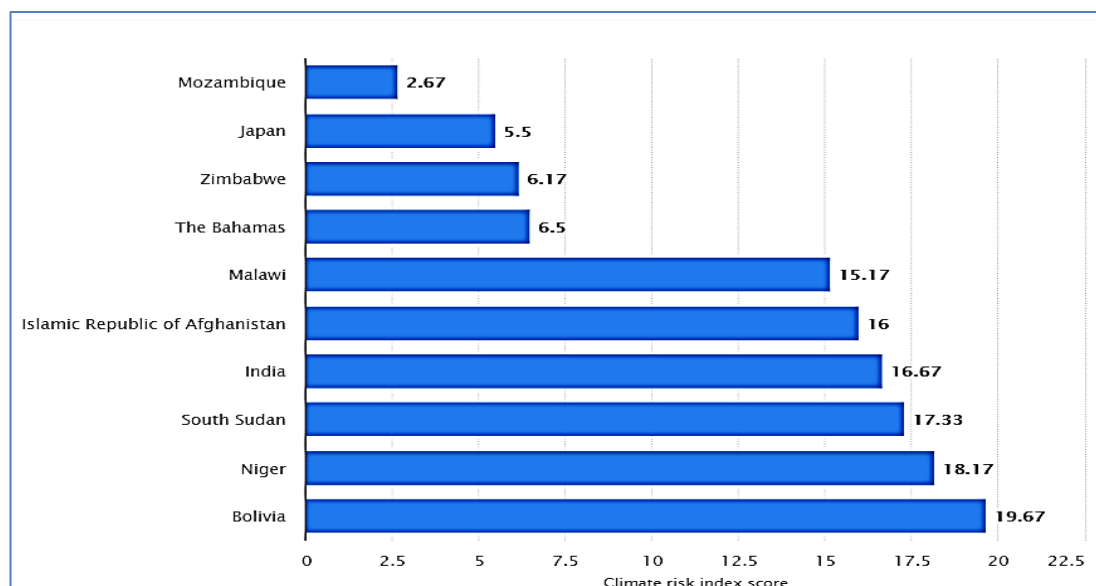


Figure 6: Climate risk index of the most affected countries worldwide in 2019
(Source: Statista 2021)²⁰

The Figure 6 shows the climate risk index of the most affected countries worldwide in 2019. “The Global Climate Risk Index (CRI) analyses quantified impacts of extreme weather events – both in terms of fatalities as well as economic losses that occurred. It analyzes the loss figures of 180 countries from 2019 and the period between 2000 to 2019 were taken into account”. India is among the five countries considered to be the most impacted with highest risk of “either frequent events or rare, but extraordinary catastrophes” (Jaganmohan, 2021)²¹.

²⁰ Jaganmohan, M., Climate and Weather, Climate risk index of the most affected countries worldwide in 2019, 25.03.2021, Global climate risk index 2019, by select country <https://www.statista.com/statistics/950057/climate-risk-index-most-affected-countries/>

²¹ “The Climate Risk Index examines both absolute and relative impacts to create an average ranking of countries in four indicating categories: 1. Number of deaths, 2. Number of deaths per 100,000 inhabitants, 3. Sum of losses in US\$ in purchasing power parity (PPP) as well as 4. Losses per unit of Gross Domestic Product (GDP)., with a stronger emphasis on the relative indicators. Jaganmohan, M., Climate and Weather, Climate risk index of the most affected countries worldwide in 2019, 25.03.2021, Global climate risk index 2019, by select country <https://www.statista.com/statistics/950057/climate-risk-index-most-affected-countries/>

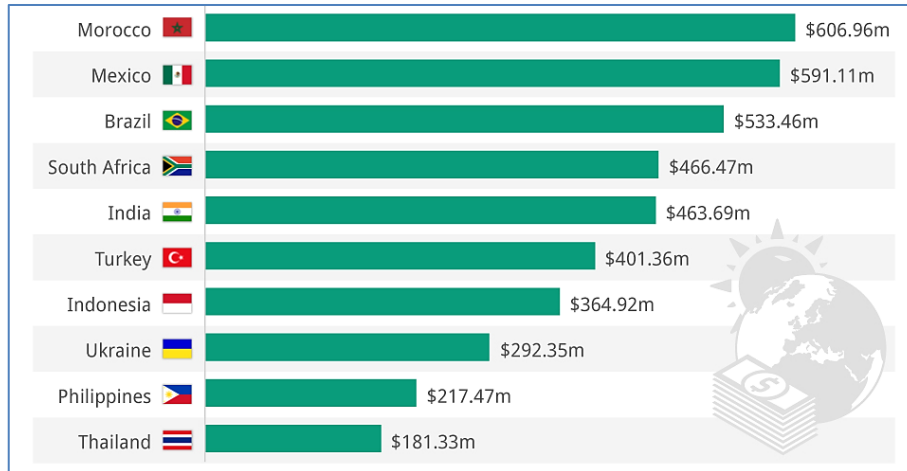


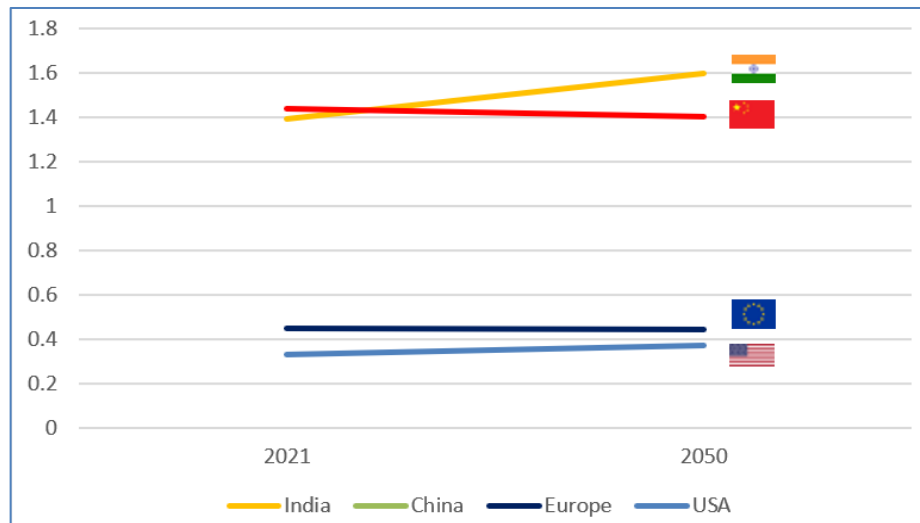
Figure 7: Top 10 recipients of international climate finance over the past decade (in million U.S. dollars) (Source: Overseas Development Institute / Statista 2021)²²

Top 10 recipients of international climate finance over the past decade (in million US dollars) showed in Figure 7. To fight climate change countries have transferred about \$7.6 billion to major climate funds in the past decade. Top spenders were the UK (\$2.5 billion) and the US (\$2.4 billion). India is among the Top 5 receivers with \$0.46 billion.

In the world today (2021) economies and societies are interlinked in a way they never have been before. National Health issues have become global issues (Cory & Stevens, 2020).

The 3D map of Global Population Density (Figure 8) also shows where large parts of the 7.8 billion population of the earth live – in India, China, and rest of Asia. India's society has the second largest population in the world in 2021.

²² Overseas Development Institute: <https://www.statista.com/chart/3046/international-climate-finance/>



**Figure 8: Graph of population in 2021 and expected population in 2050 for India, China, EU, USA
(Figure by Researcher)**

The figure 8 shows the population, in 2021, and expected numbers, in 2050, for India, China, Europe and USA. The graph visualizes the proportions of the societies of the named regions and countries²³. In 2021 the population of India was 1.39 billion with an annual increase rate of approx. 1% in the last four years. The UN projects a population of 1.6 billion, in 2050 (Macrotrends, 2021a; Roser, 2019). China had a population of 1.44 billion, in 2021, and the UN projects that China will reach its peak population and then will have a slight decrease with a projected population 1.4 billion in 2050 (Macrotrends, 2021b). The population in the USA was 0.33 billion in 2021, with a UN projection of 0.37 in 2050 (Macrotrends, 2021c). The population of EU-27's was approx. 0.446 billion in 2019 is expected to decrease to 0.441 in 2050 and then to decrease further. In the EU, this process is expected to go along with an aging society (Eurostat, 2021). The G8²⁴ countries

²³ The line between the 2021 and 2050 do not represent the expected process of population expectations till 2050. The graph is a two-time point inspection. The data comes from various sources.

²⁴ The G8 has rather crept up on our consciousness as an agency of global governance. It was brought into being in 1975 to give western leadership to the global political economy at a time of uncertainty and drew Russia into its activities in order to demonstrate and symbolize the triumph of western capitalist liberal democracy over its rival Soviet system. In that sense, the G8 constitutes the club of the winners of late twentieth century history. But it has long been beset by problems of legitimacy and efficiency. Some of the leaders of the current G8 states also recognize that global politics has moved on a long way since the settlements of 1945 and 1989 and increasingly acknowledge the need to address that changing reality. They recognize that some other powerful

population in 2021 was 0.92 billion²⁵. The population of India is today bigger than the population of Europe and USA together; it is bigger than that of the G8 countries together and it is projected to have the biggest population in the world by 2050.

When we look at the wealth and the economy, the size of the population and the size of their economy paint two completely different pictures.

Table 1. Gross Domestic Product (GDP) and GDP per Capita for India, China, EU, USA
(Data source: World bank, IMF²⁶)

	GDP in million US\$	GDP per capita US\$
India	2,868,929	6,996
China	14,342,903	16,804
Europe	18,377,000	47,827
USA	21,433,226	65,297

The table 1 shows the Gross Domestic Products in million US Dollars of the selected regions of India, China, Europe, and USA. The GDP data is mainly based on World Bank data for 2019²⁷, except for Europe where the data comes from the IMF²⁸.

countries have grown up and that it is now in the interests of the dominant countries to accommodate a limited number of these new powers within the structure and norms of the contemporary governance of globalization. In this spirit the G8 has lately sought to incorporate Brazil, China, India, Mexico, and South Africa into its affairs, dealing with them as 'outreach' partners within a process that has been dubbed the 'G8 + 5'. For their part, these early twenty-first-century winners will have to show that they are willing to work within the framework of western leadership. That is what the 'G8 + 5' process is testing out. Only when, and if, these tests are passed will the formation of a G13 become a politically realistic possibility (Payne, 2008).

²⁵ World Population Review. Retrieved from <https://worldpopulationreview.com/country-rankings/g8-countries>.

²⁶ International Monetary Fund (IMF)

²⁷ World bank data retrieved from <https://databank.worldbank.org/data/download/GDP.pdf>.

²⁸ "World Economic Outlook Database, April 2020". International Monetary Fund. Retrieved from <https://www.imf.org/en/Publications/SPROLLS/world-economic-outlook-databases#sort=%40imfdate%20descending>.

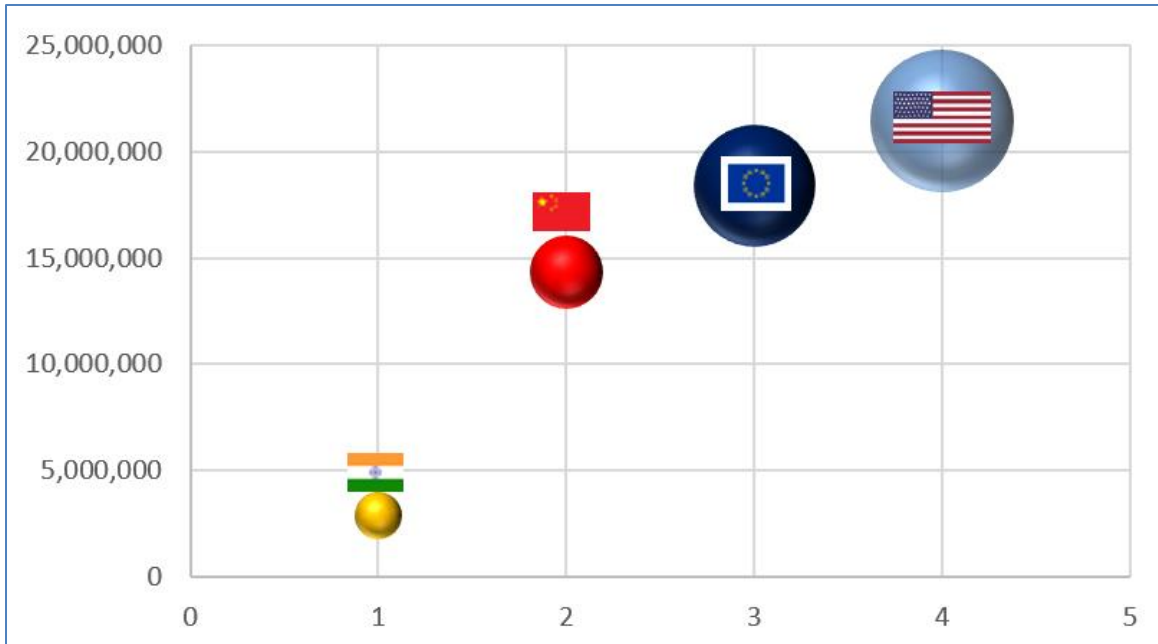


Figure 9: GDP in 2019 the size of the bubbles in the chart represents the per capita GDP.

(Graph by researcher; data source: Worldbank, IMF)

The figure 9 illustrates the data of the table. The GDP, in million US\$, is projected on the y-axis, the place of the data points represents the power of the national economy, while the size of the bubbles represents the per capita income as an average value. The GDP per capita²⁹ of an average US American (65,297 US\$) is more than nine times the amount of an Indian (6,996 US\$), for a European (47,827 US\$) it is more than seven times that of an average Indian. Chinese (16,804 US\$) have 2.4 times the GDP of an Indian. Noticing this, one has to keep in mind that these are average values, while the majority of the population may have significantly less, according to the income gap between rich and poor in each country.

²⁹ GDP per capita, PPP (current international \$). International Comparison Program, Worldbank. https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?most_recent_value_desc=true

Table 2. Number of Billionaires for India, China, EU, USA (data source: Forbes 2021)

2021	Number of Billionaires	Percentage
World	2755	100%
India	177	6%
EU	371	13%
China	626	23%
United States	724	26%

The table 2 shows the Number of millions per country/region of India, China, Europe, and USA. The data was published by Forbes Magazine in 2021³⁰.

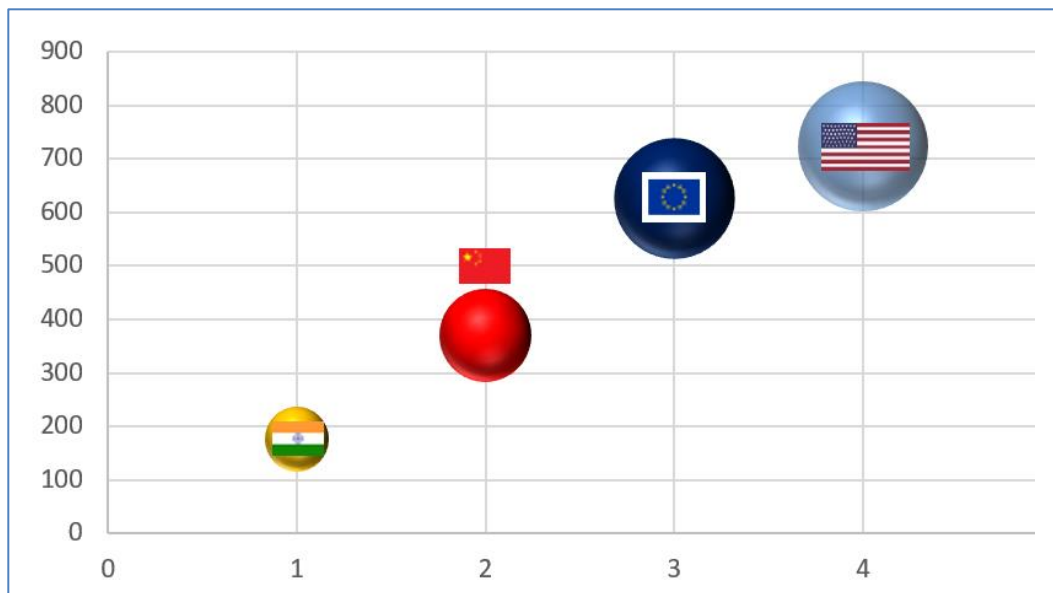


Figure 10: Numbers of Billionaires in 2021 the size of the bubbles in the chart represents the percentage of the billionaires of the world (graph: Researcher, data source: Tognini, 2021)

The figure 10 illustrates the data of the table before. The number of Billionaires is projected on the y-axis, while the size of the bubbles represents the percentage of the billionaires of the world. Country wise India has the 3rd most billionaires worldwide (177) after USA (724) and China (626). Combined the EU counts 372 billionaires, with Germany at country rank 4 (136) and France at rank 6 (42).

³⁰ Tognini, G. (2021, April 6). *The Countries with The Most Billionaires 2021*. Forbes. <https://www.forbes.com/sites/giacomotognini/2021/04/06/the-countries-with-the-most-billionaires-2021/?sh=1ea21783379b>

The table and figures on the number of billionaires and GDP show that wealth is being built in these important regions of the world. It also shows that the elite of India (and China) are equal to wealthy nations. There are large differences in per capita capital in all regions. A small elite accumulates a large part of GDP, while the majority of the population receives only a smaller part of GDP. In India, too, the middle class is relatively small in number, while the majority of the people live in underdeveloped circumstances. The 2020 Global Hunger Index shows a serious shortage in India: 14% of the population are malnourished (Welthungerhilfe, 2021) and in rural areas not every household has an electricity connection (Jaganmohan, 2020; Dutt, 2018).

“India is rapidly shifting from agricultural-based nation to industrial and services-oriented country. About 31.2% population is now living in urban areas. Over 377 million urban people are living in 7,935 towns/cities. India is a vast country divided into 29 States and 7 Union Territories (UTs). There are three mega cities – Greater Mumbai, Delhi, and Kolkata – having population of more than 10 million, 53 cities have more than 1 million population, and 415 cities having population 100,000 or more (Census, 2011). The cities having population more than 10 million are basically State capitals, Union Territories, and other business/industrial-oriented centers. India has different geographic and climatic regions (tropical wet, tropical dry, subtropical humid climate, and mountain climate) and four seasons (winter, summer, rainy, and autumn) and accordingly residents living in these zones have different consumption and waste generation pattern” (Joshi and Ahmed, 2016, p.2).

India is going through many social changes that come with the pursuit of economic change, because of direct and indirect influence of the characteristics that the change towards a 'modern' society brings.

India and the environment

India faces many ecological problems; waste management and plastic garbage are big issues³¹. “India is challenged by the nexus of environmental degradation and economic

³¹ “Plastic waste is India’s and the world’s most formidable environmental challenge today”, states the India’s Centre for Science and Environment’s (CSE) background paper on plastic waste (Nair, 2020). CSE analysis also mentioned that 79 per cent of the plastic made in the world enters our land, water, and environment as waste; some of it also enters our bodies through the food chain³¹. India’s plastic problem is very bad. Every single day plastic consumption is increasing and, hence, the plastic waste grows like piles and piles lying roadsides as an unofficial landfill, choking up in water bodies rivers, seas and oceans, and in the natural environment (Arvind, 2019).

growth amidst the paradoxical coexistence of poverty and affluence in their multifarious dimensions. These challenges are linked with the conservation and maintenance of the life supporting systems such as land, water, air, and biological diversity. The ultimate drivers of environmental degradation are population growth, inappropriate technology and consumption choices, and poverty, leading to changes in relations between people and ecosystems, and development activities such as intensive agriculture, polluting industry, and unplanned urbanization. For addressing the various environmental problems, Environmental Education for Sustainable Development (EESD) is emerging as an important approach to encourage students to conserve and protect the natural environment in their schools and in their neighborhoods” (Alexandar & Poyyamoli, 2014, p.1). It is also an essential tool to change student’s commitment, motivation, stewardship, behavior, and attitude.

One strategy to work on the waste problem is to integrate environmental education in the Indian school system. The idea is to bring knowledge to the future generation and to let them deliver the message to the present generation. The school children shall learn and then “teach” the parents, as they are not in reach for the state of such education possibilities (Lineswala *et al.*, 2017). In the words of Irina Bokova, Director General of UNESCO, "Education is the most powerful path to sustainability. Economic and

In India “the common man’s perception about solid waste management suffer ‘not in my backyard’ syndrome and leave waste to be taken care by urban local municipal bodies only” (Joshi & Ahmed, 2016, p.1). In the developed countries, Solid Waste Management (SWM) belongs to prominent thrust areas for pursuing research (Dijkgraaf & Gradus, 2004; Ferrara & Missios, 2005) and economic and technological advancements have initiated responsiveness of stakeholders towards it (Shekdar, 2009). High population growth rates, rapidly varying waste characterization and generation patterns, growing urbanization and industrialization in developing countries (Troschinetz & Mihelcic, 2009) are the important reasons for paying attention towards MSWM (Municipal Solid Waste Management) as more area is required to accommodate waste (Idris, Inane, & Hassan, 2004; in Joshi & Ahmed, 2016). “In India, rapid urbanization and uncontrolled growth rate of population are main reasons for Municipal Solid Waste (MSW) to become an acute problem” (Joshi & Ahmed, 2016, p. 3). It is anticipated that population of India would be about 1,823 million by 2051 and about 300 million tons per annum of MSW will be generated that will require around 1,450 km² of land to dispose it in a systematic manner, if ULBs³¹ in India continue to rely on landfill route for MSW management (Joshi & Ahmed, 2016). “The plastic bag waste holds second and third positions in India and South Africa respectively as one of the items in the marine debris” (Lineswala *et al.*, 2017, p. 351). “Plastic waste makes our environment filthy, chokes our drainage systems (gutters) and proves to be breeding grounds for mosquitoes and flies which results in bad smell from choked gutters and spread of diseases like malaria and cholera” (Lineswala *et al.*, 2017, p. 352).

technological solutions, political regulations or financial incentives are not enough. We need a fundamental change in the way we think and act” (UNESCO, 2013, p.7).

Environmental and Sustainable Education

The inclusion of environmental education is taken very seriously. “India is the only country to have passed one of the landmark judgments passed by the Supreme Court of the country directing all education boards to include environmental education as part of the formal education system at all levels [...]. Much remains to be done to redesign the middle school curricula so that Environmental Education for Sustainable Development (EESD) can be organically integrated into the core education modules, instead of keeping it as a separate paper or activity [...]. Active EESD must go beyond teaching about environmental issues” (Alexander & Poyyamoli, 2014, p. 17). Environmental education must provide students with knowledge and practical skills, but also promote an attitude towards the environment that leads to sustainable behavior and enables students to lead sustainable lives.

Sustainable education must go beyond environmental education. It must provide the students with techniques and methods that enable and motivate them to develop new solutions for future problems. This requires open-mindedness and vigilance as well as a critical questioning of existing patterns of action and thought. This requires an appropriate learning atmosphere in which creative processes are encouraged and can take place. The ability to think beyond the existing state of knowledge can best be promoted by practicing techniques that are intended to convey skills that are deemed necessary in the future. Unfortunately, it is common practice of education to (only) convey the current state of knowledge and to make the repetition of that knowledge the (only) matter of grading. Although in current educational discourse, this approach is often seen as an obstacle to the development of creative skills.

The status quo of sustainable education is (worldwide) “replete with scientific facts, analytical tools, optimization models and management techniques. The key pedagogical

goal is to help students intellectually understand and solve problems” (Shrivastava³², 2010, p. 443). “The promotion of environmental knowledge is viewed as a fundamental component of environmental education and a necessary prerequisite to ecological behavior; however, it has little effect on actual behavior” (Otto & Pensini, 2017).

Knowing is not enough, for actions desires and values are key. “Managing sustainability requires students to develop passion for sustainability. Passion for sustainability can be taught using a holistic pedagogy that integrates physical and emotional or spiritual learning with traditional cognitive (intellectual) learning about sustainable management” (Shrivastava, 2010, p. 443). Adults' environmental attitudes are based on values, attitudes and beliefs. Dunlap and van Liere recognize two basic belief systems that determine the attitude of adults towards the environment. One is the “belief in abundance and progress, our devotion to growth and prosperity, our faith in science and technology, and our commitment to a laissez-faire economy, limited governmental planning and private property rights all contribute to environmental degradation and/or hinder efforts to improve the quality of the environment” (Dunlap & van Liere, 1978, p. 10). The resulting anti-ecological attitude was considered by many authors in the 1970s to be the Dominant Social Paradigm (DSP), a world view “through which individuals or, collectively, a society interpret the meaning of the external world ... [and] ... a mental image of social reality that guides expectations in a society” (Dunlap & van Liere, 1978, p. 10). At the same time, they saw, what they called the “New Environmental Paradigm” (NEP), based on beliefs “of ‘limits to growth’, the necessity of achieving a ‘steady-state’ economy, the importance of preserving the ‘balance of nature’, and the need to reject the anthropocentric notion that nature exists solely for human use” (Dunlap & van Liere, 1978, p. 10). Today the weighting of the two poles of environmental awareness in society has changed. “Recognition that human activities are altering the ecosystems on which our existence—and that of all other living species—is dependent and growing acknowledgment of the necessity of achieving more sustainable forms of development give credence to suggestions that we are in the midst of a fundamental reevaluation of the underlying worldview that has guided our

³² Paul Shrivastava is one of the five acknowledged thought leaders in the corporate sustainability academic community. He is Chief Sustainability Officer and Director of the Sustainability Institute, at Pennsylvania State University, USA. Previously he was the Executive Director of Future Earth, an international sustainability research program.

relationship to the physical environment. (..) In particular, suggestions that a more ecologically sound worldview is emerging have gained credibility” (Dunlap *et al.*, 2002, p. 426). It is observed that “[a]dults with higher educational attainment, less political conservatism, more feminist beliefs, and less religious fundamentalism hold more pro-environment, “green” attitudes and values” (Evans *et al.*, 2007, p. 636, and Gardner & Stern, 2002; Gifford, 2002; Winter & Koger, 2004).

But for children the driving forces for environmental attitudes are little researched, despite the fact that in childhood most probably the foundations for later ecological attitudes are laid and therefore the environmental education of children should be given more importance. “The content and developmental patterns of children’s environmental attitudes and behaviors are largely unknown, with existing work focused on how young children morally reason about their relationship to the natural world (e.g., polluting local waterways, describing animals’ autonomy and feeling states” (Evans *et al.*, 2007, p 652). A knowledge-based approach does not seem to be fit to that age group. “Nature-based environmental education, which combines the acquisition of environmental knowledge with the promotion of an intrinsic driver, namely connectedness to nature, is proposed as a holistic approach to increase ecological behavior [...]. While both factors were similarly predicted by participation in nature-based environmental education, connectedness to nature explained 69% and environmental knowledge 2% of the variance in ecological behavior” in 4th to 6th graders (Otto & Pensini, 2017, p. 88).

India and its Education system

India, with 1.3 billion residents³³, has the second largest education system in the world (after China). India is a federal union, comprising twenty-nine states and seven union territories. The states and union territories are further subdivided into districts and further into smaller administrative divisions. Indian has hundreds of languages and dialects. But there are 22 officially recognized languages in India³⁴. English language is not classified

³³ World Population Prospects the 2017 Revision: Key findings and Advance Tables - Department of Economic and Social Affairs, Population Division, United Nations, p.1. https://population.un.org/wpp/publications/files/wpp2017_keyfindings.pdf

³⁴ Constitution of India, Eighth schedule - Articles 344(1) and 351, https://www.mha.gov.in/sites/default/files/Eighth_Schedule.pdf

as one of the twenty-two national languages, as it is a foreign language. Still, it is one of the official languages of the Union of India. Hindi and English languages are used for official purposes like parliamentary proceeding, judiciary, communications between the Central Government and state government, etc.³⁵. India was under the British rule between 1858 and 1947. They lay the foundation to the Indian education system today.

After the Independence of India, in 1947, based on many policies, the standardized educational system, a common structure of education throughout the country, the “10+2+3“-system³⁶ was accepted by most of the States (Mohanty, 2002). According to 12th Five Year Plan (2013)³⁷ of India, education acts as an integrative force in society, imparting values that foster social cohesion and national identity. “A well-educated population, equipped with the relevant knowledge, attitudes and skills is essential for economic and social development in the twenty-first century³⁸” (Government of India, 2013, p. 47).

The socio-economic circumstances delineated before creating a social environment and an academic system which is highly competitive. Many Indian students feel a big social pressure on them, with high anxiety rates, becoming heartbreaking visual at student suicides. According to the World Health Organization, 2018, within three years more than 26,000 students have committed suicide across India. The crude suicide rates 2019 (per 100,000 population) in the age group between 15-19 years were for Spain 2.4, France 2.8, Germany 4.7 and India 10.4 (Who, 2021). The Indian National Crime Records Bureau statistics of 2019 reported 139,123 suicides, which is a rate of suicide of 10.4 per 100,000 persons. 2% (2,782) of all suicides were due to failure in examination. 32,4% (45,076) of

³⁵ Constitutional Provisions: Official Language Related Part-17 of the Constitution of India. Department of Official Language, Government of India. <http://rajbhasha.nic.in/en/constitutional-provisions>

³⁶ The 10+2+3 pattern of education in India refers to 10 years school, 2 years junior college or Intermediated study and 3 years bachelor's degree.

³⁷ Five-Year Plans are centralized and integrated national economic programs. From 1947 to 2017, the Indian economy was premised on the concept of planning. This was carried through the Five-Year Plans, developed, executed, and monitored by the Planning Commission (1951-2014) and the National Institution for Transforming India (NITI) Aayog (2015-2017).

³⁸ Government of India. (2013). Twelfth five-year plan (2012-2017), Vol.III. Social Sector. Sage Publications. https://www.education.gov.in/sites/upload_files/mhrd/files/document-reports/XIIFYP_SocialSector.pdf

all suicides were due to family problems. 7.4% (10,295) of all suicide victims were students (NCRB, 2020).

Most student suicides are caused by underlying psychiatric factors such as stress, depression, and anxiety. Many students in India are having physical, mental and emotional imbalances to some degree. A study by Deb *et al.* about academic stress and mental health of Indian high school students found:

“Nearly two-thirds (63.5%) of the [high school] students reported stress due to academic pressure – with no significant differences across gender, age, grade, and several other personal factors. About two-thirds (66%) of the students reported feeling pressure from their parents for better academic performance. The degree of parental pressure experienced differed significantly across the educational levels of the parents, mother’s occupation, number of private tutors, and academic performance. In particular, children of fathers possessing a lower education level (non-graduates) were found to be more likely to perceive pressure for better academic performance. About one-thirds (32.6%) of the students were symptomatic of psychiatric case and 81.6% reported examination-related anxiety. Academic stress was positively correlated with parental pressure and psychiatric problems, while examination-related anxiety also was positively related to psychiatric problems” (Deb *et al.*, 2015).

Modern ways to deal with stress and health are pharmaceutical products and psychological treatments. Nevertheless, many individuals fear possible side-effects or doubt the effectiveness of a solution through doctoral talks. All over the world, but especially in India a growing number of individuals is trying out ‘alternative’ stress and anxiety reduction methods, like meditation.

India and its relation to yoga and Meditation

Yoga and meditation are traditionally known in India to foster the overall development of a personality. The government of India encourages a renaissance of the traditional knowledge and aims to imbibe it into the national health system as well as in the educational system. It is seen as a helpful tool (amongst many others) to foster a positive development.

“Yoga is an invaluable gift of India's ancient tradition. It embodies unity of mind and body; thought and action; restraint and fulfillment; harmony between man and nature; a holistic approach to health and well-being. It is not about exercise but to discover the sense of oneness with yourself, the world, and the nature. By changing our lifestyle and creating consciousness, it can help us to deal with climate

change." (Narendra Modi, Prime Minister of India at 69th session of United Nations General Assembly on September 27, 2014)

In view of this, central government, state governments and universities in India encourage the researchers, academics and long-time practitioners of yoga and meditation to do the research on this area of the ancient Indian knowledge of yoga and meditation in order to raise awareness, broaden the knowledge and bring it into practice. The government administration has created special ministries and separate departments. Yoga and meditation are offered as part of the academic program at some universities and many schools, including private and boarding schools in India.

In 2015 the Government of India³⁹ conceptualized a new research program 'Science and Technology of Yoga and Meditation' (SATYAM) under its Cognitive Science Research Initiative. It stated that "as Yoga and Meditation are interdisciplinary endeavors that interface with Neuroscience, Medicine, Psychology, Philosophy, Social Sciences and so on, therefore, an interdisciplinary approach is needed to converge different and diverse disciplines as well as approaches and methods in the study of yoga and meditation. Thus, comprehensive research on yoga and meditation is expected to address various challenges confronting physical and mental health. This new program is aimed to foster scientific research on the effects of yoga and meditation on physical and mental health and on cognitive functioning in healthy people as well as in patients with disorders⁴⁰". Inception of International Day of Yoga has been initiated by United Nations General Assembly in 2015. In 2016, UNESCO listed the yoga as an intangible cultural heritage.

The system of education in the ancient India has got theoretical and practical content that included meditation, seminars, and religious practices (Gupta, 2007). The conceptual background of yoga and meditation has its origin in Indian philosophy. In the ancient Indian culture, the disciplines of yoga and meditation played a key role, and they were advised for general wellbeing, healthful and happy living. "Yoga and Meditation" is a combination

³⁹ Department of science and technology, Ministry of science and technology, India.

⁴⁰ Ministry of science and Technology, Science and Technology of Yoga and Meditation (SATYAM), Call for Research Proposals for 2018-19, <http://www.dst.gov.in/science-and-technology-yoga-and-meditation>

of physical and mental disciplines, which make the body stronger and healthier and the mind calmer and more controlled, helping towards self-realization (Saraswati, 2008). It was the especially important and compulsory subject to be taught to every student in the ancient education system.

There is a fundamental difference between the social representation of meditation in Europe and India. In India the perception of meditation is, that the general positive effects of meditation are widespread known and accepted in India. A general basic knowledge of meditation belongs to the cultural identity of India. Although the percentage of actual practitioners of meditation are in India also a minority. While in Europe meditation effects are seen overly critical and are labeled with an aura of belief, or of being a placebo effect or of being wellness⁴¹. Such would not be accepted in India and considered to lack in various forms of substance of knowledge about meditation.

Meditation is an ancient discipline (or art, or technique, or mix of art, spirituality and technique), that focuses on the inner processes of humans. At the same time, it is a technique that aims for the health⁴² of the person. It was highly valued in ancient times, then it has lost social importance, though it never vanished. Now, it is getting its renaissance in the East and a growing acceptance and interest in the West.

Conclusions for this work

This research aims to look for the social value and usefulness of meditation for societies in change. The societies of the world are interlinked. They face different inner problems, but they also share problems with other societies of the global community. Despite lots of knowledge, the implementation of (dramatic) social change, that is commonly agreed on

⁴¹ For example, that may be as helpful as putting yoghurt and cucumber slices on the face, to relax.

⁴² Health in the the meaning of the WHO definition: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1946, p. 100). Preamble to the Constitution of WHO as adopted by the International Health Conference, New York, 19 June - 22 July 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of WHO, no. 2, p. 100) and entered into force on 7 April 1948.

WHO. (1946). Constitution of the World Health Organization. https://www.who.int/governance/eb/who_constitution_en.pdf

to be necessary (e.g., SDGs), is missing. Meditation is considered to be a tool of inner transformation in the ancient Indian texts. Serge Moscovici, in his book on minority influence and conversion phenomenon, said that inner transformation affects the outer world (Moscovici, 1976). This research is going to look deeper into some of these aspects, by observing the effect of yoga in regard to a gradual process of conversion, and we will see whether meditation can be helpful to a social change towards true sustainability. It focuses on the educational sector which is often believed to be a driver for social change.

Current research has taken place in the “homeland” of meditation, India, which still has a strong socio-cultural relationship with ancient practice and knowledge. Large groups should be observed over a longer period to be able to make substantial contributions to the discourse about meditation. Small case studies with small groups may be helpful to find out the effects of meditation, but this type of research always lacks that their results cannot be extra polarized on larger groups. So, the argumentation often goes like, “that is only the result of that group (of people with special interest)”. Therefore, for the present study, the researcher selected a random group that had no particular/special history of meditation.

To make a social change possible on a global level, this work is hoped to become an agent, a macrosocial enabler providing the institutions (teachers, schools, government) with an expertise that can be relied on in a decision-making process. Hence it was chosen to use quantitative approaches in a large part, using sophisticated statistical methods to analyze the data. Relevant literature is sighted and presented. And qualitative feedbacks of students and teachers are incorporated to help with the interpretation of the statistical results and to attribute them with meaning. And to capture other aspects that were not covered by the statistical methods.

August Comte, the founder of sociology, saw sociology as “a new way of looking at society” (Comte, 1838) and combined the disciplines of history, psychology and economics in his perspective of sociology. This research aims to add another small facet to the view of societies - both Indian and European society. It will be interdisciplinary in that it also looks at psychological, educational and philosophical aspects. It will try to examine the observation object in its embedding in a social system.

The investigation of the present research will create scientific added value in the academic research field. This present study examines the effect of meditation on attitudes towards the environment that has not been carried out before. Although the ancient literature reports personality enhancements and better learning skills acquired through traditional meditation practices, little has been researched into the effect of meditation on academic performance. Some research⁴³ on the effects of meditation on academic performance and some other variables covered only included short meditation periods 8 weeks or less. The intervention period was chosen here with 6 months, a half year of complete school. Research also examines the social influence of meditation and social change through meditation, including both educational and sociological perspectives.

In the context of this work one can often only try to give an overview of the areas bordering on the meditation topic. Due to the abundance of potentially possible information, only a limited amount can be used and presented here. However, these have been compiled and presented to the best knowledge and belief. The knowledge presented in the theoretical part results from the respected papers. In this respect, they do not necessarily reflect one's own views on the respective topic, but those of the respective authors.

Without stating this for every research and result presented in this work, we must be and surely are aware of the fact that in almost any research the causality presented can be questioned as there may be other determinants, that are not taken into account by the experiment. In particular when it comes to studies with or about humans, not all potential causal variables, socio-psychological or cultural determinisms can be covered or excluded by a researcher. That is why it is all the more important in the own work to use sophisticated methods that rule out errors as far as possible.

Experimental meditation research is often criticized because of its low informative value due to small groups and a non-random selection process of the participants. This means that often individuals who have been already interested beforehand into meditation, become members of the experimental meditation group, which could already bias the

⁴³ Discussed in detail in the literature review section in the following chapters.

results. Most meditation research is case studies or experiments with groups of 15-30 participants, the time span is mostly 8-12 weeks, often with only one meditation per week.

The practical part of this research was one of the largest meditation experiments known to the author. This experiment was carried out with a group of 400 randomly selected students, 200 of whom meditated daily for half a year with guidance during the experiment. That is about 156 sessions (26 weeks of 6 days each, since Sunday was free of meditation sessions). A period of time and an extent of the intervention effect that are considerably large enough to relate (possible) occurring effects to the intervention.

Another often mentioned point of criticism of meditation research is the poor scientific quality of the statistical evaluations. In the present study, 200 participants with the same personal characteristics were used as a control group. And the statistical analysis part was done using sophisticated statistical methods.

The research was conducted as a quasi-experimental approach and a possible change between pre- and post-test was expected. The quantitative part will examine an individual change on certain dimensions but in a sum, it also examines the change of a group through the intervention with Sahaja Yoga Meditation. And it will try to find indicators for the (potential) societal change that the personal change can bring. The qualitative part, consisting the feedback of students and teachers, will undermine, will help and direct the interpretation of the results of the quantitative statistical methods.

The present study is conducted among the secondary school students in government schools, in Andhra Pradesh, India. Government schools in India are also available in rural areas and free of charge, therefore, affordable for lower class population. They are in competition with private schools which have a higher reputation and are preferred by middle- and higher-class families, even though they are not available in their own villages. There is the urge for government schools and teachers to show engagement in order to gain back lost respect in the community. India is still searching an own Indian way to modernize its education system, a system that integrates and is consistent with the socio-cultural background and at the same time has beneficial effects for the development of the country.

Organization of the Chapters

The Introduction showed the embedment of the research topic in a broad context and its relevance. The research work is structured into four broader parts. Part I consists of the review of related literature. Part II explains the methodology used. Part III consists of the statistical analysis of the collected quantitative data. Part IV discusses the results of the statistical analysis, relates them, and adds the lessons learned from student and teacher feedback to draw final conclusions and recommendations.

Part I the Literature review starts with observing the social context of India (1.1). This is thought to be necessary especially for the international reader, not familiar with the socio-cultural differences of India, especially compared to the Western world. Also, for the Indian reader it highlights cultural specialties that might be taken for granted and extrapolated to the whole world, but are actually kind of unique; also, it describes the setting of the research. India as such is a non-secularized society with spiritual aspects interwoven in every part of the social life, from daily life, to festivals, towards governmental programs. The sociological setting may be less influential on the primary effects of the meditational state, but it is certainly influential in terms of acceptance, appreciation and, what was of great importance for this work, the possibility of embedding a meditation course in public schools.

Second part (1.2) of chapter 1 examines different approaches that describe social change. As it was carved out in the introduction, social change is (globally) needed to meet the needs of adjustment processes of societies towards sustainability. Social change is needed for the change towards an autonomous shaped Indian education system. And the study will observe potential changes through the intervention with meditation on the small social system of the participating schools. On the national perspective of Indian society, meditation concepts are part of the socio-cultural framework and may be a fruitful component to integrate in the education system as there are attempts to “Indianize” the education system on one hand. At the same time, meditation can be an additional way, in addition to the classic school system, to make the coming generation fit for the coming challenges.

Chapter 2 is dedicated to the vast field of meditation and yoga. A short, but by no means comprehensive, history of meditation and its social perception is presented. During the review of the relevant literature, it became very soon obvious that there are differences between the perceptions of yoga and meditation in the Western hemisphere and in the Eastern/ Indian Hemisphere and between the practices and effects of different methods labelled with the umbrella terms “yoga” and “meditation”. These backgrounds and their consequences are examined and portrayed. Popular methods of the Western hemisphere (Mindfulness Based Stress Reduction [MBSR] and Transcendental Meditation [TM]) emphasize their secular or non-spiritual nature. This explicit separation is not necessary in the Indian context as traditional yoga approaches as well as Indian social reality does not have this separation. The different understandings and emphasis result from different socio-cultural backgrounds. The intervention method, Sahaja Yoga Meditation (SYM), used in this study did not emphasize spiritual aspects, but it also did not exclude them totally, as the philosophical concept of the five elements (earth, fire, water, air and space) is part of its practice. It was chosen as a current method that follows the core of the traditional Hindu meditation – thoughtless awareness/ silent mind; without this state of meditation, according to meditation philosophy, not much can be reached. In addition, SYM is practiced worldwide in many countries and shows only beneficial effects in research literature. The most prominent meditation practices in the West (MBSR and TM) are not designed to reach that non-thought state and they don’t aim to reach it. Therefore, throughout the study it will be important to distinguish between the observable practice of meditation and the non-observable state of meditation. In discourse, too, it is important to note which practice should have which effect, as they differ greatly within meditation practices. At the end of this chapter current meditation classification schemes are listed and another classification scheme is added by the researcher. This activity-based classification approach was found missing in the scientific discussion and may be very helpful for future researchers.

Chapter 3 reviews literature regarding the three dependent variables of the study: Environmental Attitudes, Academic Anxiety and Academic Performance. They are chosen and measured as examples for a general development that, according to the philosophy of meditation, is resulting from the meditative state of non-thinking. The introduction has embedded the research topic into the broader picture and has shown its relation and

relevance for society in a macrosocial perspective, namely it is embedded in the field of social change to meet the needs of sustainable development. According to the philosophy of meditation, regularly reaching the state of meditation results in a personal development of different skill, abilities and virtues. The resulting ideal character is wise, benevolent and full of capabilities. In today's language, this could be understood as a truly sustainable character, with long-term thinking, taking into account natural resources and living conditions and taking into account economic, ecological and social aspects that are geared towards the well-being of all, for this and future generations. The Environmental Attitudes (DV1-EA) are considered to be indicators for this general development towards a 'sustainable' character. Academic Anxiety (DV2-AA) and anxiety as such are considered to be dysfunctional for the personal development in many aspects of live. They are seen as hurdles that stand in the way of the development of one's own potential. Finally, the Academic Performance (DV3-AP) is largely used as the measurement of the educational success of personal development in the school environment. Although it does not necessarily reflect all parts of personal development, it is still considered to be an important key for the future progress in life. Even if these variables would not be regarded as indicators of a general personal development through meditation, they are still considered to be of high relevance for the students, their families and society as such – and therefore are worthy of closer, detailed and accurate observation.

Part II describes the methodology of the study. The study is portrayed (Chapter 4) and the research method and the study design are classified and introduced, details of the selection of subjects and variables, design of the study and procedure are given. It is a pre-post test design with two equivalent and similar groups of 200 students each. The total number of 400, together with other assumptions that have to be proven by calculations ensure high reliability of the data and its transferability to other groups of the population. The Experimental Group (EG) was given a daily 45 minutes intervention for the period of half a year with Sahaja Yoga Meditation (SYM). The Control Group (CG) had no intervention. The study took place in 10 governmental schools in the state of Andhra Pradesh. The intervention was given by regular teachers of the respective schools, which had the additional qualification of 10-20 years of experience in instruction on Sahaja Yoga Meditation. The classes (9th grade each) were assigned to the Experimental or the Control Group by lot.

Chapter 5 refers to the materials and questionnaires used for the study. Standard questionnaires, that have been tried and tested in practice largely before, and that were geared towards the target group, were used to ascertain the measurement - the Environmental Attitudes Scale (EAS) and Academic Anxiety Scale (AAS). For the Academic Performance the respective current academic reports of the two half years were taken, with the mean grade as the relevant output.

Chapter 6 describes the statistical procedures used for the analysis of the quantitative data. The sophisticated method of Analysis of Covariance (ANCOVA) is described. This method does not only measure the differences between pre- and post-test between two groups, it can also distinguish clearly between effects that are likely to occur from external factors and those effects that can be only explained through the intervention. This became particularly relevant because the results of the observations also showed effects for the control group that could only be explained by the intervention.

Part III is dedicated to the statistical analysis of the quantitative data. First, in chapter 7, the appropriateness of the sample will be determined. If it shows normal distribution the results of the analysis can be extrapolated to the whole population and normal distribution is a crucial precondition for the choice of the analysis method. The method of the Analysis of the Covariance (ANCOVA) was chosen as it eliminates possible side effects. For the ANCOVA the same procedures must be done for all three dependent variables separately (Environmental Attitudes – Chapter 8, Academic Anxiety – Chapter 9, Academic Performance Chapter 10) to find out the significance of the effect and the size of the effect. Then the effect size resulting from the questionnaires (for DV1-EA and DV2-AA) is set into context with other test results to understand the outcome better. As a last statistical analysis segment (Chapter 11) it was chosen to research the correlation between the three dependent variables to see in how far they show interconnected influences.

Part IV is dedicated to the final discussion of the results of the study. In the beginning of Chapter 12, the explanatory power of the results and the main effects are discussed. As it was a large group observed (200 Experimental Group and 200 Control Group), they showed the same results in the pre-tests and all the other conditions for exemplarity of the

sample were analyzed as given, the results are considered to be representative and can be extrapolated on larger groups of the society – in the sense, if an intervention with Sahaja Yoga Meditation is given in a similar manner to similar other groups of students, they will show very likely similar results.

Then for each dependent variable follows a separate discussion with critical acclaim of deeper specialties of the test results than in Part III. In brief, for the Experimental Group, all the post-tests of the researched dependent variables showed a significant and large development caused by the intervention of Sahaja Yoga Meditation into a positive direction; for Environmental Attitudes (DV1-EA; 10.81% positive change), Academic Anxiety (DV2-AA; 19.78 % drop), and Academic Performance (DV3-AP 4.08%, improvement).

For the closer observations of the results for the Environmental Attitudes (DV1-EA), it was found, that in comparison of the individual results, that for the Experimental Group (EG) there were almost exclusively higher environmental approvals also in every subcategory. While the Control Group (CG) showed higher levels of approvals (although in a smaller height as such, per individual) mixed with also lower rates of agreement individually within the subcategories (Population Explosion, Wild Life, Polluters, Environmental Concern, Health & Hygiene, Forests) as well as in between individuals – means it went a bit up and down for the CG.

For the Academic Anxiety (DV2-AA) it was found that for most of the individuals of the EG there was an improvement, meaning the lowering of anxiety rates, after the meditation. While for CG there were higher and lower rates of anxiety found. Not all influence factors on Academic Anxiety were part of the questionnaire, for example family pressure was not asked for.

Comparing the post-test results of the Academic Performance (DV3-AP) between EG and CG it was found in the EG, that no individual lowered its performance and gains were from small to high (1-14% improvement). While for CG there were losses and gains and the gains were only at a smaller level (1-4%).

Additionally, an examination of the role that the gender of the students played for the results was undertaken. It was found that there was no significant difference between the results of boy and girls. Also, the socio-demographic factors did not play a role; this resulted from the sample selection as the individuals were all from rural area, mostly working class as this is the clientele of the governmental schools observed.

Finally, it was analyzed, whether and to what degree there was a (social) influence of the Experimental Group on the school population (measured through the Control Group). It was found that the CG also improved after the intervention in a proportion of 10-20% of the effects shown in the EG. These effects were found significant and through the advanced statistical method of ANCOVA they were found to (at least partly) originate from the influence that the experiment had on them. This influence may be due to competition, observation or other influences of the Experimental Group (minority influence effects) on the Control Group (as a measurement for the majority of the whole school).

Chapter 13 consists of the testimonies of the students and the teachers. This is the salt in the soup that makes the pure (but necessary) data analysis more tangible. Here the students described their experiences and observed changes during the experiment. As predicted by the philosophy of meditation, the outcomes were not only limited to the three observed variables. The students described how they positively changed in their social behavior, and how they gained friends, found more appreciation from family and neighbors, smaller illnesses were cured, etc. Regarding the environment they reported that during the state of meditation they experienced a feeling of connectedness with the elements and nature. The philosophy of the elements they knew before, but their appreciation and care for nature grew after they actually felt that connection. In some schools, the students got creative and started school projects themselves to save water or to green the school grounds. The students and the teachers described how the students became more confident, some overcame their stage fear and even won school contests, some became more interested in the subjects, some improved their working discipline, some their cognitive abilities. This qualitative analysis added different and remarkable aspects of the experiment that were not covered by the data collection of the quantitative data. The results and examples shown here by the students cannot be extrapolated to larger groups of the society as the statistical findings of the tested dependent variables,

but they give a fuller picture of what could happen and why it happened in this experiment here.

Since the statistical findings also showed a change in performance in the Control Group, the occurrence of which could only be explained by the experiment, Chapter 14 deals with the significant effect of the Experimental Group on the Control Group.

At the end of the work a summary of the whole study is made before the final conclusions are drawn, from these a political and educational outlook is given and at last recommendations for further research is given by looking at the limitations of this work.

It is concluded, that through the half year intervention of daily Sahaja Yoga Meditation significant changes were found in the three dependent variables which can be extrapolated on large groups of the society. The qualitative data in form of student's diaries and teachers observations indicate that these and other changes were caused by the practice of Sahaja Yoga Meditation, which is designed to reach the state of thoughtless awareness. It can not be proven by this study that this thoughtless state was reached, nor that this thoughtless state results in all the positive descriptions that were given by the traditional meditation scriptures. But seeing the study in total with quantitative and qualitative results, these can be interpreted as indicators in that direction. Of course, other explanation approaches are possible and this also without contradicting the philosophical interpretations. A general stress reduction through the meditation practice could induce many other changes as a result. A balanced and relaxed personality would have more self-confidence and less stress and anxiety, therefor the general performance would improve. The connection that Sahaja Yoga Meditation has to the elements could be beneficial to build a more personal feeling of connectedness with the nature.

The results of this study and others in literature indicate that the forms of meditation that go for a thoughtless meditative state outperform other stress reduction or scattering methods. The existing literature on meditation does not lead one to conclude that the results of any practice are limited to any particular cultural context or specific pre-existing mindset. There are studies from around the world, many with randomly selected participants, that show similar effects for each of the respective methods.

Although no indicators were found that the socio-cultural context actually is the source of the changes found, the general friendly and appreciative social representation of meditation in India will facilitate access to the practice used. In addition, the main concepts of meditation and the philosophy of the five elements are already well known, at least roughly, so that there are no hurdles of contradicting beliefs to be overcome. Actually, it seems largely because of that positive image of traditional meditation this experiment was allowed by the school officials. For the Indian socio-cultural context, this form of meditation therefore seems appropriate with regard to the results and the endeavor to enrich the educational system through further methods of personality development.

PART I:

**YOGA AND MEDITATION: A WAY TO
FOSTER THE EDUCATION IN INDIA AND
CONVERT YOUNG PEOPLE TO THE SOCIO-
ECONOMIC AND ECOLOGICAL
IMPERATIVES?**

1 Social Context, Social Change and Social Influence

Anthony J. Marsella wrote about “the relations between culture and conflict that emerge when parties with differing constructions of reality come into contention regarding the distribution of power, control, and influence. While differences in the construction of reality do not necessarily mean conflict [...], we must recognize the power of culture in constructing our realities, and the reluctance we have as human beings to tolerate challenges to these realities because they introduce unacceptable levels of uncertainty and doubt. The consideration of culture in the mediation of conflict broadens options for resolution by introducing possibilities outside the limits of one’s own cultural spectrum, including an improved understanding of the role of history and life contexts in generating shared meanings and behavior patterns” (Marsella, 2005, p.651).

1.1 Social Context

Most aspects of reality are socially constructed. Our perception is selective. We cannot consciously process all the information that our sensory organs provide. The way in which we select and evaluate information is strongly shaped by our social backpack. The social context of India and Europe is quite different, although some similarities can be noted. This socially framed perception shapes the way in which meditation and its effects are perceived and valued in the two cultures. It doesn't change what a particular type of meditation or yoga does or doesn't do. But it affects the general attitude towards meditation. The field of meditation touches on spiritual and moral considerations. The tension between tradition and modernity also plays a role. Ultimately, the general lifestyle is a condensed expression of the collective values of society. All these are manifestations of a shared canon of values that also shape society's ideas about good and valuable education.

1.1.1 Culture and cultural change

René Descartes is one of the founding fathers of western rationalism. Which is interpreted by his successors as a strong emphasis on rational thinking and reduction (of) and separation (with) other sources of knowledge like sensory experience, tradition or religious revelation, although, Descartes famous “Cogito ergo sum” (“I think, therefore I am”) originates from his work with the full title “Meditationes de prima philosophia, in qua Dei existentia et animae immortalitas demonstratur” (lat. Meditations on the First Philosophy, in which the existence of God and the immortality of the soul is proven). Descartes found that the only thing he can be sure of (to be true), is that he is thinking. All the rest, what we easily accept as real and reality, he found, could also just be an imagination made up by our senses. If we are not such deductive thinkers as Descartes was, we learn the truths from the people we know, our parents, our friends, our colleagues, from the books and newspapers that we read, from the television and the internet videos that we watch.

“Our world views—our cultural templates for negotiating reality—emerge from our in-born human effort after meaning, an effort that reflexively provokes us to describe, understand, predict, and control the world around us through the ordering of stimuli into complex belief- and meaning-systems that can guide behavior. Our brain not only responds to stimuli, but it also organizes, connects, and symbolizes them, and in this process, it generates patterns of explicit and implicit meanings and purposes that promote survival, growth, and development. This process occurs through socialization and often leads us to accept the idea that our constructed realities are in fact realities. The ‘relativity’ of the process and product is ignored in favor of the ‘certainty’ provided by the assumption that our way of life is correct, righteous, and indisputable (e.g., ethnocentricity). In brief, as we come to culturally construct our realities, we become grounded and inflexible and certain in our assumptions and behaviors. We become both the beneficiaries and the victims of our cultural constructions. We come to act as if our constructions are real, accurate, and not to be questioned. This sense of ethnocentricity often combines with nationalism, religious fundamentalism, and a cultural ethos leading to conflict and violence because of the perception that they are ‘right’ and deserving of defense in the face of threats to their veracity and existence” (Marsella, 2005, p. 659).

The isolation of societies due to the lack of technology and transport has allowed the emergence of highly diversified societies around the world for millennia, until the moment of globalization, when the differentiation of cultural models was weakened. Only few centuries back the cultural input resources were, for one spatially small society only, comparatively limited⁴⁴, therefore the world views of individuals did not differ too much and Dominant Social Paradigm (DSP) could establish more easily.

Nowadays as social media has become the news source number one for many people, the echo-chamber phenomenon came up. This describes people that communicate and get their news mainly from people and sources that have similar world views as they have, and that the outside corrective of other views is no longer there. Inside these groups' reality can be bound to a complete mismatch with the reality perceived outside of that echo-group network. News, fake news, information, disinformation, manipulation and lies exist just a website away or in another chat group. This type of conformism and division is not a new phenomenon of social representations, but advances in technology have made it an almost ubiquitous phenomenon that can divide societies (USA, Brexit, Covid-Vaccines). Dissemination technology is affordable and widely available so that opinions and sentiments can be disseminated and absorbed without major hurdles, and at a high speed.

This can make us clear how socio-technologically constructed our world view is. Directly in front of our door, colleagues, even partners can have a completely different views of the world. It is amazing and can be scaring, but when we get back into our own echo-chambers we get the echo, that we are right, we know what the truth and we is have got all the arguments why we are right and why the others are wrong and what is their mistake, we can't believe how they cannot see the "truth" (according to our beliefs). In a way this new-media and social-media phenomena brings to our door what was a cross-cultural reality many centuries and may be thousands of years. But at those times the ones with the other world view were not living next door but far away in foreign countries.

The basic philosophies of regions or countries build the foundation of the cultures and therefore for the societal perceptions of reality. While the content of Indo-European

⁴⁴ only few newspapers and TV programs available

ideology has a large common ground (Lyle, 1982; Dumeziel), there are fundamental differences between Greek/ European/ Western and Indian philosophy regarding the status of religion, “Unlike Greek philosophy, which separated philosophy and religion, in Indian school of thought philosophy and religion are closely and almost inseparably intertwined” (Gupta A., 2006, p. 13).

“Despite great diversity⁴⁵ among the people in India, there is a certain Indian identity, or Indian-ness, which results from the fact that key aspects of the Veda, teaching a way of life, has worked their way into the ethos of the larger culture and society in India” (Gupta, 2006, p. 52). Max Mueller spoke, in 1882, of an “unbroken continuity between the most modern and the most ancient phases of Hindu thought” (cited in Nehru 1991, p.88) and “that observation is valid for Indian society even today (Gupta, 2006, p. 53). “There is a movement toward the philosophy that is based on ancient texts such as Veda, Upanishad, and Bhagavad Gita; this movement is restricted not only to nationalists, but appears to be supported by educators, philosophers and a large percentage of the general public” (*ibid*).

Many Indians are proud of India’s cultural heritage, but they struggle with their economic and cultural identity. In India, the valuation of its cultural heritage was never questioned. It is challenged by the economic-technical dominance of the West, which seem to bring a cultural proto-type with same dominance as part of the package, while the Western culture is by large parts of Indian society considered to be ego-centered, family structures destroying, superficial and dominated as well as manipulated by market interests. These Indians want to develop economically but in an independent self-determined way, that keeps the socio-cultural roots and values.

⁴⁵ India always was a mixture of races, cultures, and religions. This was already described for example by Megasthenes in 315 B.C., Huan Tsang in 630-644 AD and Marco Polo in 1288 AD. India’s mixture of religion contains ca. 82 % Hindu’s (roughly divided into worshippers of Shiva, Vishnu, the Goddess in her various forms, and a combination of the three), 12 % Muslims (Sunni and Shia), 2.6 percent Christians (Roman Catholic and Protestants), 2 % Sikhs, 0.7 % Buddhist, 0.4% Jains, 0.3% Zoroastrians, 0.1 Jews (Gupta, 2006, p. 31).

1.1.1.1 India's religious society in comparison to European beliefs

Although the present research work is not intended to touch these spiritual roots of Indian society in deep, they may play a role for the acceptance of meditation by broad parts of society, as meditation is part of the ancient heritage and connected to spirituality, despite that nowadays it is practiced in secular ways alike. Also, it may play a role that, even though it is not practiced by the overwhelming part of the society, Indians are generally somehow informed about meditation. As the Western perception of meditation and yoga is socially constructed and has its socio-historical backpack, it is quite interesting to look also at the European views regarding spirituality and religion. The different belief systems may somehow be causal for the perception of meditation and yoga in the different parts of the world.

In every part of the world, most individuals do not choose their religion as an active act of will, most of the times they are born into it and then it is their choice to follow more or less this belief system, which is also somehow linked to the social culture in that part of the world. For example, In Europe and America there are mostly Christians, in the middle-east region Muslims and in India Hindus. There are some percentages of other beliefs in every region, but these are the dominating belief systems that shape the specific cultures. We as sociologist, we don't make judgement's whether this one is better than the other one, we just see there are different belief systems and these affect the society and their beliefs. The stronger the people live their religiosity (or spirituality) the more it affects their other beliefs and values, which become the driving forces in daily life. When the spirituality level is lower this affects beliefs and values in the same manner, but with more secularized beliefs and values. Again, nothing is judged, it is just seen and recognized.

To understand India and Indian society, it is important to understand the importance of religion and spirituality in the daily life of India today. Almost every household has a house altar, where every day a lamp is lit and flowers are offered and prayers are sent to the gods. In almost every store, every office there is also a small altar where they do the same again, now praying for good business. Temples are crowded in the mornings and in the evenings, because many make a small visit there. It is quite common, that families plan holiday trips to very famous temples, where they stay in the hotel nearby and visit the temple every day.

The sociology of religion was deeply influenced by Max Weber. “In Weber's anthropological perspective, primitive people conceived the world to be a unity in which 'everything was concrete magic'. This unified world image precluded the development of a dichotomous conception of sacred and profane spheres, so that

"the most elementary forms of behavior motivated by religious or magical factors are oriented to this world... Thus, religious or magical behavior or thinking must not be set apart from the range of everyday purposive conduct, particularly since even the ends of the religious and magical actions are predominantly economic' (Weber, 1963, p. 1)” (in Hughey, 1979, p. 87).

But “ultimately, no genuine salvation religion has been able to overcome the persistent struggle between religion and worldly institutions” (Hughey, 1979, p. 88) as the approach to be “saintly in everything” (Weber 1946, 119) is not everybody's cup of tea and that kind of ethical absolutism clashes with the neighbors, that do not follow the “religious ethic of brotherliness” (Hughey, 1979, p. 88).

In Europe today daily life is not so interwoven with religious or spiritual aspects as it is in India today. “There is ample evidence of religious decline⁴⁶ in Western Europe⁴⁷” (Voas & Dobler, 2011, p.39). This process of secularization can be understood as a social loss of meaning of religion. Max Weber is the father of the secularization theory, although he did not use the term 'secularization' very often it is like a theme in much of his work, where he specified it in more precise concepts, such as "disenchantment," "rationalization" and "intellectualization" (Hughey, 1979, p. 86). Max Weber did not define secularization as “progress”; for Weber, secularization is a long process that is linked to a belief in economy and progress. It was this belief in progress that worked and dominated Europe until the Second World War and until 1960. The “secularization theory” came from the 1950s and

⁴⁶ And “It still seems fair to say that society is changing religiously not because individuals are changing, but rather because old people are gradually replaced by younger people with different characteristics. Much remains to be understood, though, about why recent generations are different. Parents may be partly responsible, by giving children more control over their own lives. The composition of society has changed, but so has the context in which people are raised. Young people acquire different values and face new conditions” (Voas & Dobler, 2011, p.39).

⁴⁷ “[B]ut no general consensus on the situation in the East [of Europe]” (Voas & Dobler, 2011, p.39). Things are much more nuanced now and there are traditional currents in Europe that are stronger than the progressive trends.

1960s and the ideas of Enlightenment that “modernization necessarily leads to a decline of religion, both in society and the minds of individuals” (Berger, 1999, p. 2)⁴⁸.

But something comparable to Europe's secularization process cannot be found yet in India. “There is no equivalent in the sub-continent. Instead, we have either those who, perceiving secularization as the gift of Christianity, deny its applicability to geographical India, or we have straight forward secular histories” (Vanaik, 1997, p.5).

More, Peter Ludwig Berger⁴⁹ is of the opinion that secularization as a wish or expectation of a whole society was maybe too hasty. Berger states the “assumption that we live in a secularized world is false. The world today, with some exceptions [...] is as furiously religious as it ever was” (Berger, 1999, p. 2). Berger states “with great confidence: Those who neglect religion in their analyses of contemporary affairs do so at great peril” (Berger, 1999, p. 18).

Berger labels Western Europe as one of two exceptions in the world, where “the old secularization theory seems to hold” (Berger, 1999, p. 9). “Europe stands out as quite different from other parts of the world, and certainly, from the United States. One of the most interesting puzzles in the sociology of religion is why Americans are so much more religious as well as more churchly than Europeans. The other exception to the desecularization thesis is less ambiguous. There exists an international subculture composed of people with Western-type higher education, especially in the humanities and social sciences, that is indeed secularized”⁵⁰ (Berger, 1999, p. 10).

⁴⁸ “Sure, modernization has had some secularizing effects, more in some places than in others. But it has also provoked powerful movements of counter-secularization” (Berger, 1999, p. 3). Berger sees the Islamic movements in Africa and South-east Asia and the Evangelical movements in East Asia, Africa and especially in South America to be the most thriving religious movements (at least till 1999). Especially the evangelical is largely driven by women.

⁴⁹ Peter Ludwig Berger was an American sociologist, born in Austria. Berger became known for his work in the sociology of knowledge, the sociology of religion, study of modernization, and theoretical contributions to sociological theory.

⁵⁰ “A purely secular view of reality has its principal social location in an elite culture that, not surprisingly, is resented by large numbers of people who are not part of it but who feel its influence (most troublingly, as their children are subjected to an education that ignores or even directly attacks their own beliefs and values).” “This subculture is the principal “carrier” of progressive,

The degree of secularization of a society might affect the perception of meditation. As meditation is in large parts intertwined with spirituality. A secular society like France will be less likely to accept practices or methods that are connected with spirituality. On top of that spirituality is not founded in the roots of the own dominant spiritual belief-system (Christianity in the case of France and the Western Countries). This will be the case even if the (meditation) practice has been separated from its spiritual origin, as the social conditioning of individuals who grew up in a society of belief systems will shape them even if they themselves belong to the secular wing of only worldly beliefs.

The European Values Study is a cross-national research project on basic human values in Europe. It takes place every nine years with 70.000 people interviewed. The following results of the 2017 survey are given here for France in numbers. The percentage of people in France⁵¹ who say that ...:

- ... religion is very or quite important in their lives: ca. 37%
- ... they are convinced atheists: ca. 23%
- ... they believe in reincarnation: ca. 27%
- ... they believe in life after death: ca. 46% (Luijkx & Halman, 2017).

The European Values Study interrogates many hundreds of dimensions related to belief. The questions about reincarnation and life after death are interesting in the context of meditation and yoga as they are connected to the idea of self-improvement⁵², which is a big motivation to start meditation.

Enlightened beliefs and values. While its members are relatively thin on the ground, they are very influential, as they control the institutions that provide the "official" definitions of reality notably the educational system, the media of mass communication, and the higher reaches of the legal system. They are remarkably similar all over the world today, as they have been for a long time." (Berger, 1999, p. 11).

⁵¹France is not the standard and nowhere near the average for European faith power, actually it is on the lower end. It is taken as an example because this work was written at a French university. In fact, belief in God / or a Supreme Being in France is the lowest in Europe. Italy and Poland, for example, have a higher proportion of active believers. In any case, as explained above, the degree of secularization is much higher in all parts of Europe than in India.

⁵² "A sizeable minority of Westerners who have no particular connection with Eastern or New Age religions nevertheless claim to believe in reincarnation. [...]. An interview study conducted in England mapped the range of meanings such people give to reincarnation, and found Karma was widely referred

In a 2011 survey of Reuters and Ipsos of ca. 18.000 participants in 23 countries ca. 51% of the global citizens believed in a supreme being and in an afterlife. Those who believed that they will simply cease to exist were 39% in France and 20% in India in the 2011 poll⁵³ (Duffy, 2011).

The philosophy of reincarnation (and Karma⁵⁴), which does not exist in Christianity or Islam, might be one (amongst others) possible deep-rooted underlying causes for the different perceptions of meditation and yoga in the East and in the West. A rational worldly perspective narrows down the concept of personal development mainly to professional, leisure or physical perspectives. A form of belief in God or in a higher being extends the individual requirements for personality development immensely and gives much greater weight to other aspects that go beyond the narrow worldly goals, such as: moral and social aspects, as they are part of the overarching belief system. If one believes in rebirth, this pursuit of personal development becomes an essential aspect of life. And people will be very open to methods of self-perfecting.

1.1.1.2 Indian views on Modernization

Dr. Surendra Bhaskar⁵⁵ depicts in Contemporary Social Science (2014) in a very touching way the social realities of the current two big societal streams, in India, one progressive Western oriented, the other being the traditionalistic preserving stream:

“India is a vast country with its rich heritage and socio-ethical cultural values. Indian civilization is thousand years old and its moral social and values are handed over to present generation by their ancestors. Indian people have legacy of rich traditions

to, but in the context of Western notions of self-improvement; there was little recognition of the possibility of bad karma leading to ‘downward mobility’ in the next life, and little linking of karma to everyday action” (Walter & Waterhouse, 2001).

⁵³ 18% said they do not believe in God, and 17 % were not sure.

⁵⁴ The concept of karma is described in more detail later in Chapter 2.

⁵⁵ “Dr. Surendra Bhaskar is presently working as Assistant Director in Rajasthan State Commission for Protection of Child Rights. Dr. Bhaskar authored seven books and published more than two dozen articles in various journals. He runs a group named “Proud Parents” for girl child families and associated with an NGO, Saviour Education Welfare & Awareness (SEWA), which is working in the field of education and medical.” <https://novapublishers.com/writer/surendra-bhaskar/>

such as service before self, respect for women and elders, peaceful association, sacrifice, love and harmony.

The recent years has bestowed a hallucinating effect of modernization, which has taken away the whole world by storm. Even the remotest part of the country has not been escaped from its influence. Modernization is the transition of the traditional rural folk society into an urban industrial state society.

It is a process by which values, beliefs, morals, ways of life, economic pursuits and all other existential dimensions undergo a gradual change to the demands of the changing social milieu. This process does not occur smoothly and yet it affects every institution, structure, function, and life taking heavy toll of existing of cultural balance. The scientific and technological advancement have brought about remarkable changes in the whole system of social relationship and replaced with new ideologies in the place of traditional ones⁵⁶ (Bhaskar, 2014, p. 35-36).

Modernization processes challenge the structures of social organization and traditions. The process of social differentiation can lead to conflicts. "Modernization as a construct plays an important role in theories of social change" (Irwin, 1975, p. 595). Regarding the sociological development process in India, Bhaskar describes Indian's ambiguous emotional state:

"Modernization can be well understood by studying Sanskritization⁵⁷ and Westernization⁵⁸. These all are related processes that define social change in various contexts. Sanskritization is related to Brahminization which promoted the 'sacred' outlook whereas Westernization is a middle-class phenomenon which has merely influence of western countries. [...] Westernization follows the adoption of the western lifestyle, cultural ways, behavior pattern, working style, *etc.*, whereas modernization is pouring symbolize for advancement and betterment of society in a positive sense. Yogendra Singh, on the other hand, defends the concept of Modernization. According to him Modernization is broader than the two processes of Sanskritization and westernization. He further said that it is a 'cultural universal' and not necessarily confined to any single society" (Bhaskar, 2014, p. 36).

⁵⁶ This process from rural and traditional society to the modernization was the same in France and in Italy during the 1950's to the 1960's.

⁵⁷ Sanskritization formally refers to the ancient Indian language Sanskrit (comparable to Latin), but in a figurative sense to the implementation of Indian values, Indian approaches and social lifestyles in a (modern) way that appears to be a promising alternative to the American lifestyle for the more conservative parts of Indian Society.

⁵⁸ "Indian sociologist Srinivas regarded modernization as a valve loaded. He prefers to use term westernization instead of modernization for the changes which occurred in social and cultural context of India over the 150 years of British rule. (...) Most of the time people believe that modernization and westernization are synonymous to each other. (Bhaskar, 2014, p. 36).

The term modernization emerged in Europe in the post-war period, and most likely at the same time in India. While the positive meaning associated with modernization no longer exists in Europe. According to S. N. Eisenstadt (1966, p. 1) “Historically, modernization is the process of change towards social, economic and political system that have developed in Western Europe and North America from the seventeenth to the nineteenth century and spread to other European countries and nineteenth and twentieth century to the South American, Asian and African continents” (Eisenstadt, 1966, p. 1). In India “[i]n past the term was used in a narrow sense but in present time modernization has been given a broader meaning. It includes a change and shift in people over all life styles, behavior patterns, tastes, choices, recreational facilities and so on. Modernization has many dimensions like social, political, economic, cultural, educational, administrative, etc.” (Bhaskar, 2014, p. 37). He describes: “Modernization means to adopt modern ways in every walk of life, to have a modern spirit and character based on rationalism and scientific thinking. In the nineteenth century many Indians intellectual were impressed by modern science and the doctrines of reason and humanism of the West. They demanded modernization, which they felt would serve as the key to the regeneration of their decaying society” (Bhaskar, 2014, p. 37).

Gore (1982 in Bhaskar, 2014, p. 37) clarifies the term modernization “does not denote any philosophy or movement, but it only symbolizes a process of change. In fact, ‘modernization’ is understood as a process which indicates the adoption of modern ways of life and values.”

Lerner (1958 in Bhaskar, 2014, p. 37) says, “Modernization is the current term for an old process of social change whereby less developed societies acquire the characteristics common to more developed societies.” Lerner gives the mass media a critical role in the expansion of psychic mobility in the modernization process. To Lerner (1958) mass media were the now called traditional media such as radio, television, cinema, newspapers, books, etc. Nowadays, streaming media and social media apps are accelerating the modernization processes due to their omnipresent availability and the fact that broadcasters and recipients in many cases have free access. “According to Lerner’s view, transition from traditional to modern society is linked at the individual level by a change in the personality structure. Mobile personalities are deemed as an essential trait in the

modernization process. ‘The mobile person is distinguished by a high capacity for identification with new aspect of his environment, he comes equipped with the mechanism needed to incorporate new demands upon himself that arise outside of his habitual experience’” (Sandeepasmarani, 2019)⁵⁹.

The term Sanskritization provided a “basis for the discussion to what extent values were, and still are, influencing social change in India” (Kulke, 1979, p. 399). It was M. N. Srinivas who spoke of Sanskritization first in his famous *“Religion and Society among the Coorgs of South India”* (1952) which was very influential to social anthropological research (Kulke, 1979, p. 398).

“The caste system is far from a rigid system in which the position of each component caste is fixed for all time. Movement has always been possible, and especially so in the middle regions of the hierarchy. A low caste was able, in a generation or two, to rise to a higher position in the hierarchy by adopting vegetarianism and teetotalism, and by Sanskritizing its ritual and pantheon. In short, it took over, as far as possible, the customs, rites, and beliefs of the Brahmins, and the adoption of the Brahminic way of life by a low caste seems to have been frequent, though theoretically forbidden. This process has been called ‘Sanskritization’ [...], in preference to ‘Brahminization’, as certain Vedic rites are confined to the Brahmins and the two other ‘twice-born’ castes” (Srinivas, 1952, p. 30)

In everyday life, too, there is a discomfort for conservative people with a western lifestyle that is viewed less as new and modern but rather as hostile to moral and culture. In addition, it is considered to promote unsustainable consumerism as such. For example, handmade items and clothing made from natural materials are considered valuable cultural objects. At the same time, they are of higher quality and more durable than machine-made plastic items. There is a similar assessment in Europe, but in India handcrafted natural products are still the rule in many cases, for example the traditional fabric sarees for women, while t-shirts for women, for example, are the exception. Whereas in Europe and America the standardized branded products are the rule and handmade alternatives are hard to find.

Baskar describes the current situation in India:

⁵⁹ Sandeepasmarani, 2019, <https://sandeepa.home.blog/2019/07/30/daniel-lerners-theory-of-modernization/>

“Our youth are distancing themselves from the basic elements of tradition viz. their dress, manners, behaviour and other area of interest. The modern mass media means has influenced the mind of youth in different ways, but youth is grasping sensuous programs more instead of programs related to Indian values. The enduring quality of Indian culture represents the happy synthesis of worldliness and renunciation, but our youth has seen to tend more towards materialistic attitude. They want to grab all the opportunities to enjoy in life. Hippy culture of the western is accepted by the youth, and they become moderate by fashion and indulged in drugs and alcoholism as a sign of modernization. Chakravarty found that traditional attitudes among the younger generations are changing very rapidly but their modern attitudes are not being reflected in actual process. Many values of the older generation are now put in jeopardy. It erodes the traditional mystique of the parental authority and guidance defining Gen X’s aspirations, its lifestyle and future planning. The global culture has influenced the youth in multidimensional ways from their career choices, family and community interaction, leisure time activities to their inter-generational relations and socialization process” (Bhaskar, 2014, p. 36).

Indian Society is changing, and it is fast changing. Through literacy, internet, and mobile phones there is fast access to the whole world. While parts of the population are living in conditions of a developing country, with bad infrastructure regarding house, hygienic, transportation, communication *etc.*, other (smaller and wealthier) parts are fully embedded into modern international lifestyle and its ambitions⁶⁰. Besides that, through mobile phones the connection to the changes of modernization are accessible mostly also in rural areas. Societal changes are pushed by the youth, in some cases they may be orchestrated by a few elders (e.g., for the promotion of certain products in movies and in the advertisements), but most of the elder generation prefers stability and looks skeptically on the changes.

Surendra Bhaskar analyzes the outcomes of his study. He portrays the situation of the youth and at the same time portrays the (balanced) view of the older generation on the social change and social reality in India.

“Modernization is not caused by a single factor. It is the mix result of Western education, industrialization, urbanization, technological advancement and many more.

⁶⁰ Indian movies often display these lifestyles with expensive cars, big houses full of technology and dancing couples on the Switzerland mountains, movie actors are frequently drinking and smoking (which does not portray the lifestyle of most of the people and may as well be not necessary for the story but integrated only for product placement reasons). The movies appeal to the youth, they like the Bollywood productions, not because the movies would portray their social reality, which they do not, but because it gives them something to dream, and it creates desires.

India has emerged a global technological giant and Multinational Companies see India a vast market of their product. Modernization influenced our people and cultural fabrication. The western culture might have brought obscenity and disrespect, but it has eradicated a lot of the social evils and has helped India in transforming into a better and progressed nation. The present study shows that a small city like Sikar is not left away from the change of modernization. Youth of this region had started come to the grip of its bad affect. A large percent of them consumed alcohol, smoke cigarette and chew tobacco. The trend of modernity is so high that they prefer these as status symbol compromising their health. North Indian traditional food is still on the top of their priority in test. Non-vegetarian food which was prohibited in their home attracts them in restaurant. Fast food and processed food like chips *etc.*, is the common in present time. Modernization also changed their dress pattern. Majority of youth now prefer to wear branded readymade garments with latest accessories. Majority of the youngster prefer the current spousal choice practices, which involve the choice of spouses as suggested by their parents. Love marriages are no tabooer in this area but still youth persuade their parents to convert that in arranged marriage. Youth seem keener towards current socio-political problems. They strongly oppose to social problem such as dowry system and corruption. They are very much against of current caste base reservation system. It is also clear from the study that no change has taken place relating to the practices followed in spousal choice and still they prefer marriage within their caste. Modern generation stick to Cell phones, computer games, gizmos, and other indoor activities. Outings now are more about going to malls and cinema halls, not gardens and playgrounds. Due to fast pace of change and modern lifestyle early signs related to psychological problems such as stress, depression is getting noticed in youth. A feeling of alienation and estrangement keeps haunting them” (Bhaskar, 2014, p. 46).

For India (as for other developing countries), modernization is not an internally growing process of progress, but largely a utopia brought to India from outside. Parts of Indian society feel attracted to that ‘modern’ lifestyle and adopt it, while even larger parts of society see also the negative sides that come along with that type of ‘progress’ and criticizes them sharply. Above all, the critical voices warn of a decline in morality. In addition uncritical consumption that does not correspond to Indian economic strength and lifestyle. The modern, established image of society, which is particularly attractive to young people, comes primarily from the USA. After the Second World War, the American way of life had also greatly changed and shaped (Western) European societies. After the collapse of the Eastern Bloc under the leadership of the Soviet Union, the American or Western European way of life also spread fast in the former Eastern Bloc states. This is why some authors prefer the term westernization rather than modernization when they specifically want to refer to this origin of the development of lifestyles.

India is rich for its culture and traditions. India has unity in diversity in its different cultures, religions, ideologies, languages, customs, and castes etc. “India is famous for its cultural,

religious and tradition diversity. It is undergoing the process of change called modernization. This process played a vital role in bringing up the society, but it has also carried some negative impact over our cultural values and manners” (Bhaskar, 2014, p. 47). So, there is a clear distinction between effects of technological progress and the societal effects that partly come together with certain economic patterns and those societal effects that may result from a different culture.

The undeniable, irrefutable and irreversible influence of the modern West has brought benefits such as economic development and technical progress, but it is also attributed to societal developments that are perceived as negative. In particular, the decline in family structures, which in India means the dissolution of large families with a tendency towards one- or two-child families living on their own. This process of family importance erosion has been seen in America as well as in the European states. There, however, it is already more advanced, which shows in the western countries for example by the number of single households and single parents, which is enormous compared to India. The institution of marriage no longer has the status of importance in these countries that it had since antiquity and into the post-war years. In these countries this is largely seen as a great emancipatory achievement. In the Indian perception, however, the skeptical view of this social development predominates. The extended family is often portrayed as an outdated concept of rural and underdeveloped societies in which, due to a lack of social protection, a bevy of children is conceived in order to be cared by them in the old ages. Living in a social network has undisputed economic advantages, accommodating several generations in one house saves the costs of multiple households, and the division of labor makes everyday life easier. But family does not only mean economic and social support, but also an emotional home and the localization of belonging, the passing on of traditions and collected family knowledge (e.g., craftsman ship, “family wisdom”, wisdom of the elders). And living in large family structures makes it easier to build up capital over generations. While only a few succeed in this in Western societies. Today in the west it is not uncommon that the total life’s savings end up being spend on an old people's or nursing home.

What is needed and sought is a way to use the positive effects of modernization without taking on the negative side effects at the same time.

"Indian society needs to become more modern in terms of its own values, resources and opportunities. The real modernization for our country should mean the abolition of social evils like child marriage, female feticide, casteism, dowry system⁶¹ and superstition. Feeling of brotherhood, love, harmony, peace, and respect for elders which are the main fabric of our culture and should not to be compromised-on by modernity. Modernization requires transformation and it should be towards progressive democratic, social and scientific ideals" (Bhaskar, 2014, p. 47).

India wants to modernize in large parts, but this modernization is not understood as adopting a concept of life in total. Serious modern development from the Indian point of view means modern technology and a progressive society (which e.g., overcomes the caste problem) but with a simultaneous development and implementation of own Indian concepts of the lifestyle, especially with regard to family concepts and moral and religious values.

"The current onslaught of modernity can be no harm if we continue to be guided and inspired by the words of the great social worker and philosophers like Kabir, Buddha, and Gandhi, *etc.*, who had left great impression on Indian culture" (Bhaskar, 2014, p. 47).

One approach to finding an Indian way of modernization is to remember the good that this society has produced in terms of cultural and social concepts. Some of these have been forgotten or, for various reasons, in the past have not found the political respect that conservative modernizers believe they deserve. However, it is not a matter of simply adopting old theories, methods and concepts, but of consciously checking these concepts for strengths and weaknesses and adapting them specifically to today's conditions. For example, the Indian government promotes alternative healing methods and their research as additional pillars of the health system and promotes research and application of meditation and yoga in modern concepts (→ 1.1.4 SATYAM). In the education system it is discussed which aspects of upbringing and education of Gandhi and Tagore, who both developed highly respected educational policy concepts, can enrich the education system (→ 1.1.3).

⁶¹ The dowry system in India refers to the durable goods, cash, and real or movable property that the bride's family gives to the groom, his parents and his relatives as a condition of the marriage.

“Education and modernization are closely linked. It is education that serves as an efficient instrument for effective modernization. If a nation is to modernize itself, the spread of education in rapid pace is essential. Education produces the skilled personnel to perform differential roles in life. They would contribute to the growth of a nation through their creative abilities and productive efforts. Education is the key that opens the doors of modernization in various fields like economic, industrial, technological and social fields. The Kothari Commission (1964- 66) says: The process of modernization will, therefore be directly related to the pace of educational advance and the one sure way to modernize quickly is to spread education, to produce educated and skilled citizens” (Krishnan *et al.*, 2013, p. 102).

Education can be a tool for modernization The education system can pick up technological developments and adjust its teaching. It can pick up political ideas and philosophies and serve in a conservational or in a changing way. In general, the education system has a large influence on the social system and on the implementation or passing on of its values to the new generation. By this at the same time it is set up according to the values of the constituent social system, which has its cultural and historical background.

1.1.2 The historical, cultural, geopolitical, and philosophical context of Indian education system

1.1.2.1 Educational basics

Education is a broad field that is interpreted in many ways by educators, politicians, philosophers, scientists and idealists. The interpretation is often context-related, sometimes even situational, and influenced by experience, personal understanding, values and world views⁶² (Krishnan *et al.*, 2013). Education can be seen as an instrument

⁶² Definitions of Education, as quoted in the Self Instructional Materials (SIM) for teachers teaching at the upper primary level.

“Rig Veda - Education is something “which makes a man self reliant and selfless”.

Upanishad - “Education is that whose end product is salvation”.

Panini - “Education means the training which one gets from nature”.

Shankaracharya - “Self-realization is education”.

Swami Vivekananda - “Education is the manifestation of divinity already existed in elan”.

of social maintenance and social change. Cultural heritage and values profoundly affect a country's education system (Sharma, 2016).

“Etymologically the word ‘Education’ is derived from the Latin word ‘Educare’ means ‘to nourish’, ‘to bring up’, ‘to raise’, ‘to pour’, ‘to rear’. ‘Educare’ means ‘to lead out’, ‘to draw out’. Greek word ‘Educatum’ means ‘to train’ or act of teaching or training.

Morphologically the word ‘education’ is derived from two words ‘e’ and ‘duco’ ‘e’ means from inside and ‘duco’ means to develop. The two words combined together give the meaning - to make something grow or develop from within” (Krishnan *et al.*, 2013, p. 14-15).

The West Bengal government choose the Netaji Subhas Open University to implement an Open and Distance Learning mode (ODL) to train up the in-service untrained teachers teaching at the upper primary level with Self Instructional Materials (SIM). Reading the SIM gives a good insight into a current Indian approach to education⁶³. Education can be understood as narrow or as broad concepts – meaning school instructions or lifelong

Sri Aurobindo - “Education is the development of happiness and character in a child”.
Gandhiji - “Education means an all round drawing out of the best in a child and man - by body, mind and spirit”.
Tagore - “Education is that which makes one’s life in harmony with all existences”.
Plato - “Education is the best way of training children according to their good qualities and instincts. Education is the power of sharing happiness and sorrows equally”.
Aristotle - “Education is the creation of sound mind in a sound body”.
Froebel - “Education is leading out of hidden power in man”.
Pestalozzi - “Education is the natural, harmonious and progressive development of man’s innate powers”.
T. P. Nunn - “Education is the complete development of the individuality of the child, so that he can make an original contribution to the best of his capacity”.
UNESCO - “Education includes all the process that develops human ability and behaviour” (Krishnan *et al.*, 2013, p. 15).

⁶³ They structure their introduction to the teacher training along the following fundamental classifications categories. It is distinguished between liberal education (general education with a wide range of subjects) and utilitarian education (in preparation for a specific profession) – they can be looked as different concepts, but mostly they are understood by educators as the earlier and later phases of education. Education can be described by looking closer at the process – e.g., Teaching, Training, Instruction, Indoctrination or Initiation. Education can be looked at in regard to its outcomes like Knowledge, Skills, Attitudes, Values and Interest. (Krishnan *et al.*, 2013, p. 18).

learning through experience⁶⁴. Education is definitely a developmental process and in its idealistic interpretation, (in an Indian understanding) this development shall lead to the realization of all the possibilities of an individual (Self-actualization / Self-realization). The developmental process of education is described by the SIM:

“Education is responsible for physical, mental and emotional development of a person. The main function of the education is to give such training. For this, school environment should also be helpful.

According to T. P. Nunn, education is an effort to secure for everyone the conditions under which individuality is most completely developed. John Dewey, is of the opinion that, the development of all those capacities (physical, mental, moral and social) in the individual will enable him to control his environment and fulfill his possibilities. Socrates has said that the “knowledge is power” and this knowledge can be developed by only education. P.C. Banerji has said, “education is the development of the power of adaptation to an ever-changing social environment”. Plato also said that education “develops in the body and in the soul (of the pupil) all the beauty and all the perfection, which he is capable of. Gandhiji [Gandhi] also said that education has to bring all round development of the child. Through education individual develops the innate powers and capacities. It also brings knowledge and experience and in turn develops the man” (Krishnan *et al.*, 2013, p. 25).

⁶⁴ “Broadly speaking, education means not the communication of information by the teacher or mere acquisition of knowledge or intelligence or experiences by a person but it has to develop the practice (study), behaviour and skills in that person and provide the opportunity to lead a complete life. It means that the education should make the effort to bring out the natural hidden powers and capacities of the child. Education is a process of development from birth to death. It includes each and every experience of life. Experience based on culture is also education. Thus all experiences are educative in nature. Talent is something which pre-exists in a child. Education has to discover and provide suitable experiences to it and that talent has to be bloomed. From this, child’s behavior, knowledge, language, character etc. are refined and education is responsible for an all-round development of the child. Education is a lifelong process. A child when educated is influenced by different media directly or indirectly that shapes the personality. The following definitions, stresses the broader meaning of education. S. S. Mackenzi - In the wider sense, “it is a process that goes on throughout life, and is promoted by almost every experience in life”. [...]

In a narrow sense, school instruction is called education. In this process the society strives to achieve predetermined aims, during specific time, by providing pre-structured textual knowledge to children. This happens with the help of certain methods of teaching. The main purpose of education here is to bring in changes and assist mental development of child who comes to the school. In this process, the teacher plays a dominant role where as child is a passive listener and is forced to learn certain knowledge mechanically. Such knowledge cannot help to bring complete development of the personality as intended. Neither will it help the natural development of the child’s innate powers and talents. Hence, it is of no use to him for his future life. The following definitions make the narrow meaning of education more clear. S. S. Meckanzi - “In narrow sense, education may be taken to mean any consciously directed effort to develop and cultivate our powers”. Prof. Drever - “Education is the process in which and by which knowledge, character and behavior of the young are shaped and moulded”. Therefore, education means both the acquisition of knowledge and experience as well as development of skills, habits and attitudes, which help a person to lead a full and worthwhile life in this world and to develop the wholesome personality” (Krishnan *et al.*, 2013, p. 16-17)

The quintessence and the ultimate goal of this developmental processes would be self-actualization,

which “is the realization of one’s own potentialities. Individual should be helped to know his powers and abilities and he should be free to develop them. Then only his individuality becomes complete and unique. Self-actualization is attaining complete satisfaction for having achieved the desire and needs according to one’s own abilities, interests and attitudes and then realizing the functions of the world and to co-operate in the welfare and progress of mankind. Self-actualization is possible only when the development of the child or the individual is in a balanced, harmonious and integrated way. For this, the teacher should create a congenial situation and try to bring out the talents of the students and make them realize their competencies. Such persons can develop the virtues and understand the world and contribute to the progress of the society. (Krishnan *et al.*, 2013, p. 25-26)

Psychologically, self-actualization means to fulfill one’s individual nature in all its aspects. When all the basic needs are satisfied, self-actualization is possible. In Abraham Maslow’s “Human hierarchy of needs” the highest stage is the stage of self-actualization. According to Maslow, when the basic needs are satisfied at least minimally, he will be motivated towards self-actualization. A self-actualized individual will be dynamic and optimistic. He will be void of anger, distress, malice, selfishness and aggressiveness. He behaves with love, tolerance and spirit of co-operation.

Self-realization is the ultimate goal of life i.e., attainment of Moksha for Indians. Self-actualization means, to enable the children to realize themselves. Education has to provide the means by which the child may be enabled to realize his innate power and abilities. Then children will know their power and abilities and get satisfaction. For self-realization it is very essential that the child must have the knowledge about himself and about society. An individual should be allowed freedom to express his thought and action. Then only self-realization becomes meaningful. Ancient Indian education was also aimed at self-realization. Rig Veda mentioned the “education makes a man self-reliant and self-less”. According to Shankaracharya, “education is the realization of the self”. The power and abilities can be used best when they are realized rightly” (Krishnan *et al.*, 2013, p. 25-26).

The concepts of self-actualization and self-realization are not only important in the developmental process of education, they are also important goals of meditation and therefore closely linked to meditation practice.

The socio-historical development of India's education system is structured into three (to five) basic periods: Pre-colonial (ancient, mediaeval), colonial, post-colonial (post-independence and contemporary) (Choudhary, 2006; Dhillon, 2011).

The ancient Indian system of higher education was based on religious foundations, with Hinduism, Buddhism and Jainism as the major religions. A two-folded system of education

developed: the Brahminical- and the Buddhist-System. They played an “outstanding role in creating, transforming and transmitting knowledge to the people in society” (Ghosh, 2001, p. 12).

In ancient India learning and education was regarded with substantial importance. The classical, moral, and spiritual aspects played an important role in ancient Indian education. “The aim of the education, whether literary or professional, was to make the student fit to become a useful and pious member of society” (Altekar, 1957, p. 10). “Education was communicated through the sacred classical languages of the Hindus and the Muslims, namely Sanskrit, Arabic and Persian” (Ghosh, 1989, p.2). In India’s education system the main importance is given “to develop virtues, socially accepted thoughts and habits” (Asthana, 2001, p. 2). This has its socio-cultural roots as “culture, not literacy, was the highest aim of education in [ancient] India” (Venketeswara, 1980, p. 24).

2

1.1.2.2 Vedic Education System, Ancient and Modern Gurukulas

1.1.2.2.1 Vedic Education Principles

Ancient Indian education before and within the Vedic period, was primarily a teaching based on religious world views that fostered a moral development of the individual. Worldly, materialistic knowledge was not neglected, but the materialistic, political, economic, and social spheres were to be understood and developed from the higher perspective. Dr. R. K. Mukherji describes “Since the birth of the oldest Vedic poetry, we find Indian literature for a period of more than a thousand years bearing an exclusively religious impression, it would propagate the principles of religion unconsciously. This was the essence of literature during the Vedic period. Knowledge for the sake of knowledge was not the slogan. The knowledge should help to attain salvation [...]. Education was based on religious essence but modeled to suit materialistic life” (Mukherji in Krishnan *et al.*, 2013, p. 121).

A. S. Altekar specified the understanding of the penetration of the Vedic knowledge into the worldly realms: “The knowledge is a third eye of man which gives him insight into all

affairs and teaches him how to act. In the spiritual sphere it leads to our salvation, in the mundane sphere it leads to all-round progress and prosperity. The illumination given to us by education shatters illusions, removes difficulties and enables us to realize the true values of life” (Altekar in Krishnan *et al.*, 2013, p. 122).

The basic principles of ancient Indian education aimed for life-related knowledge. The main goals of the upbringing were personal development through the development of moral values based on the Vedic scriptures, character formation, professional training and social development (Altekar, 1957). The Gurukula education nurtured the development of individuality in a way that emphasizes the importance of a social being that brings credit to his community. “The main idea was to bring to the humblest man the highest products of human mind and heart. The system looked to the development of the ‘self’ and to enable an individual to lead the highest possible life in the circumstances in which he was placed.” (Krishnan *et al.*, 2013, p. 119-120).

“The Vedic axiology does not distinguish between the social and the individual values since according to it both are part of fundamental universal values.” (Krishnan *et al.*, 2013, p. 122).

In the later Vedic period (1000 – 600 B.C.) existed three types of educational agencies: Gurukula, Parishad and Sammelan. Guru means teacher and kula means family. The students lived like sons in the family of the teacher. The students had to support the family. Parishad were larger educational institutions with many teachers that taught different subjects. They were initiated by the king⁶⁵. Sammelans were a gathering of different scholars for a particular purpose invited by the king (Jha, 1991, p. 2).

⁶⁵ Kingship was a semi-democratic institution in the Vedic period with, the heads of Kulas (tribes) having a voice in the election of the king. The duties of a king were protection from outside and inner threats, preservation of the family and (in later periods) social and economic welfare. Public consultations were part of the government and had a high status. Assemblies had to be called for all important occasions. An incapable king could be overthrown, and a new king elected (Altekar, 1949).

1.1.2.2.2 Ancient Gurukulas

“The Gurukula⁶⁶ system, [...], was one of the most important features of ancient Indian education” (Venketeswara, 1980; p. 30). The Gurukula Education System (GES; also, Yogic Education System, YES) was conducted as an ancient residential schooling system, where the students (shishya) lived together with the teacher (guru) at his residence. The close connection between teachers and students led to a comprehensive development. The education started after the Upanayana or initiation ceremony. For the admission to the preceptor’s asylum the student’s moral quality had to be impeccable. He or she should be focused on the education and not distracted by worldly pleasures like sexual activities, eating meat, intoxicating substances and gambling. The pupil should completely respect and follow the preceptor who was the guide, teacher and philosopher. Misbehavior was not tolerated and led to the exclusion of the student. (Krishnan *et al.*, 2013, p. 121).

The education was based on the scriptures of the Vedas and included elements of yoga, like Hatha Yoga (asanas), meditation (more secular part) as well as chanting of mantras and puja (more religious part).

The control of the mind is very important as the attention (chitta) can be focused on liberation or bound by distractions. Yoga and meditation are used to calm the mind, according to the ancient Indian teachings of Vasishtha and Patanjali⁶⁷. A calm and balanced mind leads to self-realization.

⁶⁶ “Gurukula was a type of residential education system in ancient India with student living near or with the teacher (called in Indian language as guru), in the same house” (Cheng *et al.*, 2002). “The relationship between teacher and student was so sacred that no fee was taken from the students. However, the student had to offer a token of respect paid to the teacher at the end of his studies known as ‘Gurudakshina’. It may be in the form of money or a special task that the student had to perform for the teacher. The main focus of Gurukulas was on imparting learning to the students in a natural surrounding where the students lived with each other with brotherhood, humanity, love and discipline. The essential teachings were in subjects like language, science, mathematics through group discussions, self-learning *etc.* Not only this, but the focus was also given on arts, sports, crafts, singing that developed their intelligence and critical thinking. Activities such as yoga, meditation, mantra chanting (Sanskrit verses in praising of god) *etc.*, generated positivity and peace of mind and made them fit” (Chandwani, 2019).

⁶⁷ Patanjali is considered to be the “father of yoga”. It is mostly estimated that he lived between 200 BC and 400 AD.

Ancient Indian philosophy accepted three ways to gain knowledge: Hearing (Shravana)⁶⁸, Meditation (Manana) and realization (Nididhyasan) (Krishnan *et al.*, 2013, p. 122).

The organization of gurukula education in ancient India took place without government supervision, influence or funding. It was however the duty of the king to see that the scholars were able to practice their studies and impart knowledge freely without the interference of third parties.

1.1.2.2.3 Modern Gurukulas in the Light of Research

The modern Gurukula Education System (GES; also, Yogic Education System, YES) take up the idea of residential schooling system, where the students (shishya) live together with the teachers (guru). There are numerous private residential schools today spread over whole India⁶⁹, even so they can be considered a marginal phenomenon in the Indian education system of today. The modern Gurukula residential school include elements of traditional yoga, like Hatha Yoga (asanas), meditation (more secular part) as well as chanting of mantras and puja (more religious part), which are described in the Vedas.

Indian studies are comparing the GES with the residential schools of Modern Education System (MES). “The two educational systems are different in every respect, not just in their overall aims, but also in their detailed content [...]. The GES curriculum includes yoga asanas, pranayama breathing exercises, meditation, mantra recitation, devotional songs, puja, and yogic games. In contrast, the corresponding aspects of the MES program comprise physical exercises, mathematical puzzles, music, daily prayers, and conventional sports” (Rangan *et al.*, 2009b, p. 59).

⁶⁸ “Shravana or hearing was further categorized into six types: 1. upakrama, a formal ceremony performed preceding the study of Veda, 2. abhyasa, recitation of the texts, 3. apurvata, a ready grasp of the meaning, 4. phala, a comprehension of the outcome, 5. arthavada, the reading of elucidatory books, and 6. upapatti, attainment of final conclusion” (Krishnan *et al.*, 2013, p. 122-123).

⁶⁹ For example, the Indian Development Foundation, runs 246 Bal Gurukuls / Empowerment Programmes, where they educate up till the 5th grade. Afterwards the students transfer to government schools. <http://www.idf.org.in/vision-and-mission.html>

All activities in the GES are aiming to calm down and relax, while almost all activities in the MES target an activation of body and mind. “In contrast to physical exercises, yoga asanas and pranayama produce relaxation at the physical level, while simultaneously enlivening the vital level; mathematical puzzles enliven the mind and may be frustrating, while dhyana⁷⁰ is calming to the mind; devotional songs may have a different effect from ordinary music, while the actions and feelings associated with puja are different from mere repetition of prayers; in contrast to physical sports, yogic games stimulate and also relax and expand the mind to a state of greater freedom” (Rangan *et al.*, 2009b).

Modern research of the GES type of education states, that all the applied techniques in the GES shall lead the mind away from the turbulences of an erratic attention. Studies comparing the GES with the residential schools of Modern Education System (MES) have found higher attention levels of the students in GES than in MES (Rangan *et al.*, 2009a). With a calm and clear mind, the attention, the memory (Saltz, 1970) and the learning as well as intuition improves. An experimental study found the Gurukula Education System to significantly improve the memory power of the students (Rangan *et al.*, 2009b). For example, Mantra recitation is said to be improve memory (Dutta, 1987).

The advantages of the GES are seen in a holistic concept that creates a healthy and productive mind and body as well as qualities of the self and more harmonious social interaction. “Yogic Education System helps students and teachers to relax the body and helps in focusing mind. It creates healthy lifestyle, provides effective treatment of a wide range of health problems or disorders, imagination power and thinking, creates a healthy environment for teaching-learning processes, and reduces their stress. It increases retention, decision making competency, muscle tone, energy, stamina, strength, and flexibility and helps them to live a life where their body, mind and spirit will be in harmony. Yogic Education is essentially a science of self-discipline that synergies the body, mind and spirit and enables self-realization”. The methods of yoga and meditation are considered to be an enabler of “harmonious social living” (Satsangi & Kumar, 2018 p.

⁷⁰ Dhyana means meditation.

117). "It aims to create a positive learning atmosphere and to develop the personality of the students" (*ibid*, p. 124).

The Gurukula Education System was the earliest Indian school system and it laid most emphasis on the personal development and virtues. The practice of meditation and yoga played a great importance for the character building in that system. Self-actualization, the unfoldment and the promotion of the potentials of the student were the focus and the main aim. Historians distinguish between the Vedic period and the Brahmin period. The transition was probably fluid. At first, the two periods hardly differed in terms of the educational system. But that changed with the increasing importance of the caste system, in which the Brahmins made themselves the leading group.

1.1.2.3 Brahminical education system

The Brahminic educational system emerged from the Athar Veda and is therefore very similar to the Vedic educational pattern. At the beginning, Brahmin upbringing was mainly religious⁷¹, later secular subjects were added. The education was given to boys and girls. Brahminic education gave importance to individual students. The students should gain courage. Three educational goals were the leitmotif of the brahminic educational approach.

The main goal was character formation, as character was considered to be the highest expression of the human soul. You wouldn't be human without character. The formation of a moral character was seen as an important goal to achieve status in society. "Reverence to the Guru, love towards his own parents, men and animals are the basis for acquisition of moral character which is purity of mind, heart and deed" (EDUCATION IN INDIA, p. 124).

⁷¹ It developed from the Vedic tradition of oral transmission from religious hymns. It emphasized (apart from the correct remembrance) the correct pronunciation and rhythm. The canon of knowledge transferred were the Vedas⁷¹. Veda means knowledge. There are four different categories of the Vedas. Rigveda (hymns), Samaveda (songs), Yajurveda (Mantras for sacrificial ceremonies) and Atharvaveda. Each Veda consists of four subdivisions: Mantras (Samhita), texts about rituals (aranyakas), commentaries (brahmanas) and texts about philosophy, spiritual knowledge, and meditation (Upanishads) (Bhattachary, 2006; Gonda, 1975; Flood, 1996).

The development of the personality was the second important goal of education. It encompasses the development of the whole human being; physical, moral, mental, emotional and social development. It leads to the surrender and pursuit of the highest ideals, namely truth, beauty and goodness, and ultimately to the final goal of self-realization.

The third goal was to develop knowledge about sociability and citizenship: man is by nature a social being. Life is made up of adjustment, collaboration, brotherhood, and compassion. Social coexistence is facilitated through knowledge and involvement of social norms as well as rights⁷² and obligations. Therefore, culture and its maintenance were also important parts of the teachings.

The establishment of a caste orientation in the education system

In the early Rigvedic period⁷³, the secret knowledge (higher religious education) was only allowed to be transferred from an initiated Rishi (teacher) to a twice born (dvija)⁷⁴. Apart from that condition, no difference was made regarding higher education between man and women in the Rigvedic period (Choudhary, 2006). In later periods the system was changed into a family tradition within the Brahminic caste, with the father giving his knowledge to the children. “The later Vedic period witnessed the crystallization of the varna system⁷⁵ which was monopolized by the twice born castes in general and by

⁷² The freedom of the individual only goes so far as it does not restrict the rights of others.

⁷³ The Rigvedic period is generally considered to be the first period. It is being historically related to a period between 2000 – 1000 B.C. to the Indo-Aryan civilization around the Indus valley in the North-West of today's India (Mallory, 1989). Hindus consider the Vedas to be delivered directly from the creator God Brahma to Rishis (sages) during their meditations (Pollock, 2011; Scharfe, 2002, p. 13-14). Therefore, time spans much earlier are considered by Hindus⁷³.

⁷⁴ Twice born is comparable to the Christian idea of “born from the spirit” (in contrast to “born from the blood”) which means the (beginning of) enlightenment.

⁷⁵ Varna is the caste system, which originally classified the population into four categories, according to their work. Later it turned into a system that passed the caste affiliation by birth, so the social status remained within a family, indiscriminately of the occupation or qualification of the person. The four castes are Brahmins (priests), Kshatriyas (warriors, princes, and kings), Vaishyas (merchants, traders, moneylenders and large landowners) and Shudras (artisans, tenants, farm workers, laborers and servants).

Brahmans in particular. Women still managed to have same influence in the sphere of education, but they were increasingly relegated to the background” (Choudhary, 2006, p. 52). The Varna Classification of four caste plus Dalits did not play that importance in the South of India. Here existed essentially a three-class system of Brahmin, non-Brahmin, and Dalit (Bernard, 2001, p. 37).

A canon of hymns existed that were transmitted orally from Brahmin to Brahmin. Different schools of thought (Sakhas or “branches”) appeared in particular areas⁷⁶. The knowledge of the hymns differed locally and not all the texts were overall accepted, some only belonged to the tradition of the different local schools of thought.

The Post-Vedic Early classical period (600-300 B.C.) marked with various forms of ritualization and monopolization of the status of the Brahmin caste (Jha, 1991 p. 2-3). “The Brahmins had been the advisers and guides of the kings and emperors in their capacity as Purohitas, therefore the dominance of the Brahmins was reflected in the creation of a new set of religious scriptures called Brahmanas. Aranyakas and Upanishads were added to the Brahmanas and by 600 BC; they together with the Vedas and their six Vedangas were studied in the Vedic schools by the Brahmins, the Kshatriyas and the Vaisyas” castes (Choudhary, 2006, p. 54).

Access to higher education and the study of the Vedas were denied to the working class (caste of Sudras). They had to learn their practical handy crafts in the family tradition.

“Buddhism came in the forefront as a challenge to Brahminism, possibly because it offered a simple way to reach salvation. As a result, the Buddhist Viharas did not possess the inherent vitality of the Vedic schools” (Ghosh, 2001, p. 158).

The Brahminical period system marked a development in the ancient education from an egalitarian education system, that was free to access for all, boys and girls, no matter what

⁷⁶ “A particular school represents the Brahmin community of a particular area, tribe, or small kingdom, or rather chieftainship. Each local school followed a particular form of ritual and pronunciation, as opposed to those of the neighboring areas. Thus, the early territory of a Vedic school usually coincides with that of a particular tribe or subtribe.” (Choudhary, SK, 2006, p. 52)

social status, to a system that excluded entire groups of the population from the higher education system, because of their social status. The basic concepts of education, that included a high importance to meditation practices, though remained the same.

The change in the education system was driven by social changes within the society. The previous division of the stalls into “professional groups” Brahmins (priests), Kshatriyas (e.g., warriors), Vaishyas (e.g.; merchants) and Sudras (e.g., laborers) had changed to a system of social classes in which the status was inherited. The education system was further manifesting the social classes, as the lower classes were denied higher formal education and by this any form of permeability within the class system was made even more difficult. This monopolization of the higher education system for the higher castes, got challenged by the appearance of a new spiritual leader and his followers.

1.1.2.4 Buddhist education system

The Buddhist education system was based on the teaching of Siddhartha Gautama Buddha. It was open for members of all castes (except slaves, army-deserters, disabled or sick) and also the choice of subject were not connected to caste systems. It was conducted in monasteries (vihara) with monks as the teachers. It consisted of Vinaya (monolithic discipline), Sutta (group discourse) and Abhidhamma (works of doctrine) and the orally taught Suttas and Sutta Vibhanya (Jha, 1991, p. 3).

The Buddhist education was partly religious and partly secular in nature. “A Buddhist text includes numerous disciplines or subjects such as the Lokayata system, Astrology, Witchcraft, the four Vedas and Vedangas, Astronomy, interpretation of omens, the philosophical system of Samkhya, Yoga, Nyaya and Vaisheshika, Music, Medicine, Magic, the art of War, poetry, and a number of arts and crafts as well as Arithmetic.” (Choudhary, SK, 2006, p. 53)

In some aspects the system can be compared with residential schools or modern universities. Certain monasteries developed a reputation for specialized excellency. For example, the Vihara of Taxila was known in the 6th century BC for its medicine, law and military teachings. Taxila was the capital of the Gandhara Empire, the city foundation

dates back to Bharata, the brother of Rama. Scholars from distant parts of India went there. Panini (5th / 4th century BC), wrote "Ashtadhyayi", which for a long time was the most important summary of Sanskrit grammar. Kautilya (4th / 3rd century BC) wrote the "Arthashastra" (constitutional law textbook of ancient India) here. The fame of Taxila university was known by Alexander the Great who conquered the city in 326 BC without a fight (Dongerkey, 1997 pp. 1-2)⁷⁷.

The universities of Nalanda (Bihar), Vikramshila (Bihar) and Vallabhi (Gujarat) probably were the most famous at that time. The library of Nalanda attracted students as far as from China, Nepal, Tibet and Korea. (Choudhary, SK, 2006, p. 53)

The Buddhist education system brought back the possibility of access to higher education for the lower classes / castes. Meditation practices were taught in the religious teachings of Buddhist monks. The Buddhist educational system did not completely replace the still predominant Brahminic educational system, but it did complement it; however, in some parts of the country it achieved the higher importance and excellence in education.

1.1.2.5 Islamic Education System - Higher Education in Mediaeval India (9th –Early 18th Century)

The mediaeval era came together with the influence and rulership of Islam. India was conquered in stages known as the Delhi Sultanate, the Bengal Sultanate, and the Mughal era. The Brahminical and Buddhist education system were partly destroyed during the early Muslim conquer but also remained in large parts in a coexistence state. (Alam, 1991).

Akbar the Great (1556 to 1605) is one of the important rulers of India. He enlarged the Mughal empire and did a lot for the equality and tolerance of Muslims and Hindu religion, as he was in reign for all his subjects. He has been "instrumental in the spread of education and learning not only of Islamic literature and arts but also of Hindu texts, arts, and music"

⁷⁷ Dongerkey, S.R. 1997. University Education in India, Manaktalas, Mumbai.

(Gupta, 2006, p. 44). He allowed Hindu students to study Sanskrit and Hindu religious scriptures such as the Upanishads and ordered Persian translation of some classical scriptures, like Ramayana, Mahabharata and the Atharva Veda (Ghosh, 2001b; Alam, 1991). He himself was practicing a lifestyle that combined rules of the Hindus, Jains, Christians, and Muslims with an emphasis on liberality, generosity, ascetism, altruism and piety and was meditating on the sun in Hindu style (Stietencron, 2005, p. 187).

“The Mediaeval era in the history of India signified a major phase of social and cultural synthesis. In fact, the history of education in Mediaeval India reflects a part of the wider study of the history of society, social history broadly interpreted with politics, economics, and religion. The mediaeval state in combination with the various other agencies such as Sufism and Bhakti ideology played a crucial role in the protracted process of integration and coexistence. Despite their diverse religions and cultures, these [...] brought the people together through their common experience in public as well as in private” (Choudhary, 2008, p. 55). Sufism, as an Islamic tradition, and Bhakti, as a Hindu tradition, (as well as many other religious groups) firmly believe in respect for others and other types of religions, since, in their opinion, all human beings were created by the same God. God may have different names in different parts of the world and may have chosen different ways to reveal His divinity. Hence, to deny the various facets of divinity would be a big step away from God for them. Mutual respect does not necessarily and exclusively mean adopting the other belief or the merging different traditions. But for the lower castes that were held down by the existing Brahminical systems, the new rulers and their religion and education system brought new opportunities. Also, the more pragmatic individuals of the higher classes reached for their chances in the new system.

Ghosh writes, “When Islam came to India and settled down to rule the people, many among the Hindus suffering from castes and other disabilities accepted the religion of the prophet Muhammad while many upper-class Hindus not only learnt Persian and Arabic to hold important positions in the administration but some of them converted themselves to Islam to do so” (Gosh, 2001b, p. 123). The Brahmins (priests) continued their education system and served as purohits to the rulers. They also functioned to Hindus as an institution for “all social and religious functions including birth, death and marriage” (Choudhary, 2008, p. 55)

“The traditional systems of education both among the Hindus and the Muslims were mostly religious and literary in character. They were largely based on ancient religious and philosophical literature of Sanskrit, Arabic and Persian. In addition to the Vedas and the Upanishads, the Hindu students specialized in subjects such as Medicine, Surgery, Astronomy, Music, Dancing, Painting, Magic, and the art of warfare, while the Muslims studied, in addition to the Koran, Rhetoric, Logic, Law, Euclid, Ptolemy’s Astronomy, other branches of natural Philosophy and works on Metaphysics” (Choudhary, 2008, p. 57; Dongerkery, 1967 p. 21).

The Islamic education system was three-folded: Maktab (elementary education) was imparted, Madrasah (higher education) and Khangah (religious education or theology the birthplace of Sufism or spiritualism in Islam). All institutions were attached to mosques, Persian and Arabic were the spoken languages. The subjects taught were agriculture, accountancy, administration, astrology, astronomy, grammar, history, geography, law, literature, logic, mathematics, metaphysics, rhetoric, and theology (Choudhary, 2008; Ghosh 2001 b; Dongerkery 1967).

The first Muslim conquerors regarded it important to destroy the existing education system and to establish an education system that supported their world views. Such an approach is often to be found in history because, on the one hand, it consolidates the positions of power of the victors, and on the other hand, the winners of conflicts like to think that their military superiority also means superiority in many other areas of life. And from their point of view, in their goodness as rulers, they want to give the gains of their superior culture and religion also to the inferior and ruled.

Akbar the Great was the first Mughal emperor to advocate tolerant coexistence between the two religious’ groups. That is why he got the name Akbar from the people, which means the great. The Hindu population was allowed to follow their religious festivals, visit the temple and uphold their education system that included meditation practices.

The next big change in the education system came when the masters of trade became the next masters of the country.

1.1.2.6 British education system in India

The East India Company did not put real efforts into establishing an education system in India. The institutions under their support thought in Sanskrit or Persian. The starting point of an English higher education system was the foundation of a Hindu College in Calcutta in 1817.

In the following years the education system was (again) styled after the needs and concepts of the ruling power. In his infamous *Minute on Indian Education*, Thomas Babington Macaulay gave a branding speech to the Governor-General of British India to reform secondary education to 'useful learning' – a phrase that to Macaulay was synonymous with Western culture. His speech is so self-exposing that it deserves to be read a bit longer in the transcript of his actual speech. The attitude and the reasoning he express does not leave any doubt about the mindset of that time, especially when we hear the reaction of the Governor General and when we know that the *English Education Act* 1835 followed Macaulay's advice in great extent.

"I am quite ready to take the oriental learning at the valuation of the orientalist themselves. I have never found one among them who could deny that a single shelf of a good European library was worth the whole native literature of India and Arabia. The intrinsic superiority of the Western literature is indeed fully admitted by those members of the committee who support the oriental plan of education [...].

It is said that the Sanskrit and the Arabic are the languages in which the sacred books of a hundred million of people are written, and that they are on that account entitled to peculiar encouragement. Assuredly it is the duty of the British Government in India to be not only tolerant but neutral on all religious questions. But to encourage the study of a literature, admitted being of small intrinsic value, only because that literature inculcated the most serious errors on the most important subjects, is a course hardly reconcilable with reason, with morality, or even with that very neutrality which ought, as we all agree, to be sacredly preserved. It is confined that a language is barren of useful knowledge. We are to teach it because it is fruitful of monstrous superstitions. We are to teach false history, false astronomy, false medicine, because we find them in company with a false religion [?] [...]. I feel with them that it is impossible for us, with our limited means, to attempt to educate the body of the people. We must at present do our best to form a class who may be interpreters between us and the millions whom we govern, -- a class of persons Indian in blood and colour, but English in tastes, in opinions, in morals and in intellect. To that class we may leave it to refine the vernacular dialects of the country, to enrich those dialects with terms of science borrowed from the Western nomenclature, and to render them by degrees fit vehicles for conveying knowledge to the great mass of

the population" [...]. Governor Bentinck answered, "I give my entire concurrence to the sentiments expressed in this Minute" (Macaulay, 1835⁷⁸).

English language as a medium of instruction and "the promotion of European literature and science amongst the natives of India" was advanced further by the British government in the years after (Basu, 1991, p. 22; Power, 1995, p. 38).

The leading Indian urban elites were supportive for an English education system, as it provided them access to prestigious jobs in the British bureaucracy or in the economy. The British wanted a "class of educated Indians at the secondary level posts in the Government and to act as intermediaries between the Raj and the Indian population" (Choudhary, 2008, p. 58; Basu, 1991, p. 22). The acceptance and the appreciation of the British and their education system was mixed in the Indian society. "Although the colonized fervently disliked colonizers, they also longed for the power and the knowledge that the colonizers possessed" (Gupta, 2006, p. 10).

But since the colonial government did not focus on the general population, the church took care of them.

"Christian missionaries were some of the most influential actors in colonial India. [...] Some of the first mission schools established were in the Bombay Presidency, Bengal and the Punjab. During this period missionaries ascribed utility to the corpus of western scholarship as an ally against Indian religions. They hoped to 'prove' their falsehoods. The primary way to do this was through western education, arguing that western scholarship was saturated with Christian morals and that such ethos would transform Indians accordingly. This was a period when the symmetry between Christianity and western scholarship was championed by missionaries such as John Murdoch and Alexander Duff. After the Indian Mutiny (1857–1858), missionaries were held in check (at least officially) by the colonial state as a means of avoiding upsetting Indian religious sensibilities. Yet, ironically, in northern India missionaries came to be relied upon by a cash-strapped Education Department. They came to dominate education and were credited with doing much to push the frontiers of western pedagogy in their efforts to propagate their faith" (Bellenoit, 2007, p. 393-394).

⁷⁸ From: Bureau of Education. Selections from Educational Records, Part I (1781-1839). Edited by H. Sharp. Calcutta: Superintendent, Government Printing, 1920. Reprint. Delhi: National Archives of India, 1965, 107-117. Retrieved from http://www.columbia.edu/itc/mealac/pritchett/00generallinks/macaulay/txt_minute_education_1835.html.

“By the end of the 19th century the charm of English education was no longer as strong among the Indian *bhadraloks*⁷⁹ as it was in the early days of the century [...]. Macaulay no longer had the sway over the Indian mind, rather national pride took over. Mother tongue and national culture” (Acharya, 1997, p. 601) were on the rise in the educational discourse, with Gandhi and Tagore being part of it.

In the period after the independence the British education system is seen critical by many Indians. “The major change in Indian higher education took place through the initiatives of British rulers that made an impact both in positive and negative ways. At that time, the indigenous system of education received a severe setback as the British system created a new class which served the British rulers” (Choudhary, 2008, p. 50). “Education in India under the British Government was first ignored, then violently and successfully opposed, then conducted on a system now universally admitted being erroneous and finally placed on its present footing” (Howell, 1872, p.1; Biswas & Agarwal, 1986).

That type of radical interpretations is shared by parts of the Indian society, although they do not give a full picture of the reality of those times.

“The notion that Indians could either collaborate with or resist colonial initiatives is simplistic, for it precludes the possibility that they could guide and direct the educational enterprise from within. Yet this is precisely what occurred in Anglican mission schools in north India. It is because of the inherently tenuous nature of this enterprise that the terms ‘oppression’ and ‘resistance’ are somewhat oversimplified for our historiography. Indians, for their part, utilized various forms of appropriation in their encounter with the western educational system. To a degree, Indians usurped the educational enterprise from within to contest the ‘superiority’ of both western knowledge and Christianity. In doing so they located traditions of reason and logic in Indian thought. Rather than serving as a hegemonic colonial undertaking, mission schools were subject to Indian agency and contestation. Indians were alert to the advantages of western educational institutions introduced under British rule and appropriated them to reproduce their own social and intellectual foundations. In this respect, this essay has aimed to shed light upon the gamut of ways in which the infrastructure was as much a product of Indian as it was of missionary agency. The rupture and destructive effects of western education and its curricula, in a sense, have been somewhat overstated. The system may have looked hegemonic, but it did not always function accordingly” (Bellenoit, 2007, p. 393-394).

⁷⁹ *Bhadralok* is Bengali for the new class of ‘gentlefolk’ who arose during British rule in India.

With the Independence of India, also the end of the British ruled education system came. The remains of the system were at the same time its legacy that Independent India had to deal with and to build up upon. "The Sergent Report of 1944 was the first attempt to formulate a national Policy on Education in India" (Basu, 1991 p. 30). "It pointed out the failure of making university education relevant to community needs and suggested means for improvement. However, by the time India became independent, in 1947, it had 18 universities and total student strength of a little less than 0.2 million. In brief, higher education in colonial India remained concentrated in and around the cities and towns and was more widespread among men than women and amongst the higher castes. It would have been almost impossible to find a rural scheduled caste or scheduled tribe woman studying in a college" (Choudhary, 2008, p. 59).

The British system served mainly for an Indian elite and it had to less schools to educate the masses. Another legacy of the British education system was the English language in the education system. In most of the countries schooling in the mother tongue is regarded of greatest importance for the development of a child in the early ages. Only nowadays it starts that in higher education, in the universities all over the world more and more courses are held in English instead of national language.

However, in regard to this works topic, it has to be pointed out that meditation did not play any role in the British education system.

1.1.2.7 Educational Ideals of Gandhi and Tagore

To this day, Mohandas Karamchand Gandhi and Rabindranath Tagore are considered visionaries whose ideas have strongly influenced Indian society. Gandhi is best known as the non-violent freedom-fighter and Tagore as the Noble Prize-winning poet. Tagore travelled the world after he won the Noble Prize in literature 1913. Tagore founded a school and a university that were run according to his educational philosophy. He had exchange with poets, politicians and world leading scientists like Albert Einstein and

Werner Heisenberg⁸⁰ and he was in regular correspondence with Satyendra Nath Bose⁸¹ and Sir Patrick Geddes⁸². Tagore was also involved in the independence debate, but much less so than Gandhi, who was the leader of the independence movement and whose life work was the independence of India. They were both of the same generation (Tagore, 1861-1941, Gandhi 1869-1948). At heart, they were both social thinkers who sought the best for the people and for their country. Gandhi's '*An Autobiography: The Story Of My Experiments With Truth*' and '*Hindu Swaraj*' and Tagore's '*Nationalism*' and '*Gora*' (along with Jawaharlal Nehru's '*An Autobiography*' and '*The Discovery of India*') are considered to be essential texts that set out a vision of modern India and helped to constitute it (Nehru, 2004, p. XV).

Both started in the early years of the 20th century to write essays on education⁸³ which they found to be an important agent for social change. "Together they were outlining the possibilities of the future" (Visvanathan, 2013, p. 47). Though their educational ideal did not have the chance to be implemented in a broad scale., as the "course of education in a country is determined ultimately [...] by expediency, in other words, by market forces" (Acharya, 1997, p. 601). Tagore's and Gandhi's educational programs were highly discussed at times before and after independence, but the educational discourse was "changed in the wake of Nehruvian modernization program" (Acharya, 1997, p. 601).

⁸⁰ Werner Heisenberg was a German physicist and one of the key pioneers of quantum mechanics. "In 1929 Heisenberg spent some time in India as the guest of Indian poet Rabindranath Tagore, with whom he had long conversations about science and Indian philosophy. This introduction to Indian thought brought Heisenberg great comfort, he told me. He began to see that the recognition of relativity, interconnectedness, and impermanence as fundamental aspects of physical reality, which had been so difficult for himself and his fellow physicists, was the very basis of Indian spiritual traditions. 'After these conversations with Tagore,' he said 'some of the ideas that had seemed so crazy suddenly made much more sense. That was a great help for me.'" (Capra, 1988, p.43).

⁸¹ Satyendra Nath Bose (1894 –1974) was an Indian mathematician and physicist. He worked together for example with Albert Einstein. Together they developed theory of the Bose–Einstein condensate.

⁸² Sir Patrick Geddes (1854–1932) was a Scottish sociologist.

⁸³ Tagore wrote more than 100 pieces on education. In 1905 he wrote the essay "Swadeshi Samaj" (The Union of Our Homeland), in which he portrayed the British rule as "political symptom of our social disease", asking Indians that "there can be no question of blind revolution, but of steady and purposeful education." (Tagore in Dutta *et al.*, 1997, p. 239-240). Gandhi wrote "Hind Swaraj" in 1908.

Nevertheless, their influence on India's educational program exists, albeit as an ideal. Gandhi and Tagore are regarded as "the two greatest Indian educationalists" (Acharya, 1997, p. 601).

Their pedagogical approaches are characterized by many differences, but also by many similarities. Tagore can be characterized as the visionary⁸⁴ who was constructing a philosophy of education, while Gandhi was more the practical thinking politician. For Gandhi "education was an integral part of his ethics based political program." (Acharya, 1997, p. 601).

They had similar views on many parts of education. Both, Tagore, and Gandhi, opposed the dominance of bookish knowledge and the emphasis on its replicating memorization⁸⁵. This does not mean that they were against imparting scientific factual knowledge from books, but that they additionally highly valued the acquisition of practical skills and character building as essential parts of education and for a personal development. While Gandhi thought very specifically about the feasibility of educational concepts in the large country of India with its socio-economic realities. He attached great importance to the use of the educational facility for the benefit of society. It should help to give the poorer classes the chance to improve their situation in the future through the education of their children, without neglecting the current needs of the family with regard to the financing of their lives and the educational establishment. Gandhi thought also about manual work as possibility of financing the school system as well as bringing the children from the fields to the school⁸⁶. Gandhi's examples of financing maybe obsolete as facts today, as the basic

⁸⁴ "Rabindranath Tagore was a man who dealt in imaginaries." The term imaginary goes back to "Cornelius Costariadis [who] made a distinction between the imagination and the imaginary. The Greek philosopher argued that the imagination is the current ecology of categories around an idea or an intellectual system. The imagination is what is an idea conventionally extrapolates as a set of possibilities, but the imaginary is the horizon that goes beyond the current paradigm and talks of visions not yet born, ideas which have not yet been worked out and worlds which are still to be constructed" (Visvanathan, 2013, p. 44).

⁸⁵ "The national system of education, however, [...] [is] turning more and more segregate and bookish" (Acharya, 1997, p. 601).

⁸⁶ Gandhi was considering the finance situation of the population and the state of high importance for a nationwide education system. His education concept regarding manual labor was thought completely from the needs of the working class. The problem was and is even today for poor laboring families, if they send their children to school, the children cannot work. The children know

financing structures and underlying social technological structures have changed since his time, but his ideas on practical implementation are still topical. In both, Gandhi's and Tagore's, works we find an urge for rejuvenating the self-sufficient village society. What seemed appropriate to many in the time of the general new beginning and the economic development situation, however, can no longer be regarded, in the severity striven for at the time, as contemporary today. Although today larger self-sufficient units are being discussed again with regard to fateful dependencies on globally relocated production in times of crisis and with regard to environmental problems.

Gandhi gave great importance to practical activities that enrich the individual's empirical knowledge. Both their education concepts included manual labor as a practical component and instrument for acquiring skills. Character and personal skills determine how facts are dealt with in later life. Tagore worried about the dominance of a "machine civilization" and machine technology over the people and nature.

A major difference of opinion between the two was the question of a national or international orientation of the country and its education system. This was evident in the different views on the use of the English language in schools. Although, "[b]oth of them discussed about the ill-effect of English education and the neglect of mother tongue" (Acharya, 1997, p. 601-602). Both supported national languages as medium of instruction. Tagore had a very poetic style of writing he wrote "in education, mother tongue

that no work means no food and the children are willingly helping their parents. Gandhi developed a village-based concept of "profit-yielding productive work" that instead of football and cricket "sports for the boys will consist in ploughing the fields". "Manual training will not consist in producing articles for a school museum, or toys which have no value. It should produce marketable articles. The children will not do this as children used to do under the whip in the early days of the factories, they will do it because it entertains them and stimulates their intellect" (Gandhi, 1939, p. 22). The concept was worked out in a curriculum, and it was calculated exactly up to the Rupee that the revenue of the work of the children could pay the teacher's salary on one side and leave the children with another half that could built an economic base for the family of the child. This is how Gandhi understood self-sufficiency. There was the fear expressed by Zakir Hussain at the Wardha conference that "teachers may, in consequence, become slave-drivers and exploit the labor of poor boys" and K.T. Shah said, "instead of the present evil of cramming, the evil of over-work and undue extraction of labor from the students would silently creep in" (Gandhi, 1939, p. 46-47). But both the critics had a different vision of economic development. They were against Gandhi's emphasis of the manual labor (in favor to machines). Gandhi knew that manual labor is the only capital of the laboring people. More "in an agrarian society labor is a way of life, not only a means of livelihood" (Acharya, 1997, p. 605).

is like the breast milk” (Tagore, 1936, p.236 in Acharya, 1997, p. 601-602). Both found the mother tongue as a medium of instruction essential. Gandhi opposed English as a medium of thoughts, as he considered it a handicap in the learning process for the students to think and to transmit their thoughts in English.

And Gandhi went further as he even was strictly against English as a subject. This is seen in the context of his full determination into the process of all-out opposition and non-cooperation with the colonial system of education. “No country can become a nation by producing a race of translators” he said (Gandhi, 1939, p. 42-43 in Acharya, 1997, p. 602).

For Tagore English language was an integral medium in for the international exchange of thoughts and ideas. Therefore, he supported English as a subject, even right from the early school years. “As one of the earliest educators to think in terms of the global village, Rabindranath Tagore’s educational model has a unique sensitivity and aptness for education within multi-racial, multi-lingual and multi-cultural situations, amidst conditions of acknowledged economic discrepancy and political imbalance” (O’Connell, 2003⁸⁷).

Tagore’s orientation was international. He denounced nationalism⁸⁸. “Tagore was skeptical of nationalism which he only saw as legitimating for violence. Nationalism [...] over-amplified the cultural ego, made it deaf for arguments of the other [...]. Internationalism was a conversation of nation states. As a result, it failed to create a dialog of civilizations. Internationalism created greater wholes while emptying the message of content. What one needed was a claim to identify a culture which could still read the other as a possibility, be at home in it and yet be oneself. This was the kind of cosmopolitanism, Tagore wished to create” (Visvanathan, 2013, p. 49).

⁸⁷ O’Connell, K. M. (2003). Rabindranath Tagore on Education. The Encyclopedia of Pedagogy and Informal Education. Retrieved from: <http://infed.org/mobi/rabindranath-tagore-on-education/>

⁸⁸ “Tagore argues that by denying the West, swadeshism⁸⁸ was turning into an intellectual enclosure movement” and he was “worried about the coerciveness of demagogic swadeshism which might create a Chinese wall between India and the West” (Visvanathan, 2013, p. 48). “He realized that imperialism is only one phase of the West, that there were other Wests that one could talk to and conspire with. Like Gandhi, he realized that one of the great contributions of the national movement could be the opening of the West to its own possibilities” (Visvanathan, 2013, p. 44).

The reciprocal relation between East and West were central concepts to the university “Viswa-Bahrati” that he founded. Tagore envisioned a multilevel international working process, which would wipe out many conflicts by the exchange of cultures, through which individuals would realize “that artists in all parts of the world have created forms of beauty, scientists discovered secrets of the universe, philosophers solved the problems of existence, saints made the truth of the spiritual world organic in their own lives, not merely for some particular race to which they belonged, but for all mankind” (Tagore, 1922, p. 171 in Gour, 2014, p. 1). Tagore's basic approach to east-west exchange was, that envisioned “to learn from the West the knowledge of modern science and technology, while enriching the West with the spiritual wisdom and sacrificial attitudes of the east” (Acharya, 1997, p. 602). But his idealistic ideas of international exchange were viewed highly skeptical in the discourse⁸⁹.

Both Gandhi and Tagore emphasized the importance of the development of the inner power ('atmashakti'⁹⁰) as the essence of development self-control and freedom of mind ('swara') (Acharya, 1997, p. 601). This is the expression of their underlying spiritual world view, which corresponds to the basic understanding of the majority of Indians, and which runs like a red thread through both of their works.

Their pedagogical concepts correspond to the Indian self-image and have therefore always been important fundamental approaches that are taken up by educators when they think about a renewal of the school concept with an Indian touch. The desire for a more “Indian” education aims at a culturally appropriate education system that has internationally comparable approaches, but also supplements through other socio-culturally coherent methods, teaching content or approaches. This should lead to better

⁸⁹ Tagore's reciprocal approach of Eastern and Western culture exchange was considered to be unrealistic. Sarat Chandra Chattopadhyaya⁸⁹ wrote in his essay “Shikshar Birodh” that “the West would never give us [Indians] their latest knowledge of science and technology nor would inculcate the sacrificial attitude and spiritual wisdom of the east; rather they would like us to remain dependent on them forever, regarding modern science and technology so as to enable them to exploit us.” (Chattopadhyaya in Acharya, p. 602).

⁹⁰ Atma Shakti is the power that comes out of the self. Atma Shakti is also the force that leads back to oneself.

educational results and also to a higher acceptance of the national education system. Because better educational results, especially compared to private schools with an English concept, would make the government schools more attractive and meet the requirements of a state education system.

With Tagore, the implementation of this underlying self-understanding of Indian educational concepts was much stronger visible in the school he opened than with Gandhi, who concentrated on the development of ideas for the political feasibility of mass education for India.

Tagore, the poet, was very concerned about the learning atmosphere, which he considered to be of highest importance to the learning process. In "Tapoban" the basic principles of Tagore's education concept can be found written down. The connection between man and nature permeates his pedagogical approach. Tagore "was one of the first in India to insist that students should be in touch with the natural environment and focus on overall development of the individual" (Francis, 2010, p. 348).

The lessons in the great outdoors, which is possible thanks to the climatic conditions in India, as well as excursions should contribute to a positive learning atmosphere, which is also supported by the special student-teacher relationship. "The guru-sishya, or teacher-student, relationship was especially important in Tagorean education. In the classical Indian tradition, teachers and students were deeply bonded. Tagore wanted to revive that time-honored relationship in his educational institutions, where a teacher was like a gardener who gave tender care to the plant so that it might slowly and steadily grow, flourish, and fructify" (Francis, 2010, p. 350). For Tagore, the learning atmosphere is even more important than the learning content, as the content can only be absorbed, if the appropriate atmosphere is provided. "Besides the academic subjects such as language, science, mathematics, history, and social studies, Tagore encouraged extracurricular activities such as social works, gardening, student government, excursions, and celebrations of different cultures and religious festivals. Hence, Tagore nurtured an atmosphere of openness and universality in his educational institutions" (Jalan, 1976 in Francis, 2010, p. 350). The knowledge should be learned through application and

experience. In this way, the content can be learned through play and is more diverse and memorable than if it were acquired by reading a text.

Education for him, not only serves to acquire professionally usable knowledge or to pass exams, but also to develop a personality with stable character. In his understanding of school, not only knowledge, but also the formation of the sense organs and higher enlightenment ('Bodh') had their important place. "Perfect freedom lies in the perfect harmony of relationship which we realize in this world – not through our response to it in *knowing* but in *being*" (Tagore in Acharya, 1997, p. 603).

Tagore writes: "The object of education is to give man the unity of truth. Formerly, when life was simple, all the different elements of man were in complete harmony. But when there came the separation of the intellect from the spiritual and the physical, the school education put entire emphasis on the intellect and the physical side of man. We devote our sole attention to giving children information, not knowing that by this emphasis we are accentuating a break between the intellectual physical, and the spiritual life. [...] I believe in a spiritual world, not as anything separate from this world, but as its innermost truth. [...] Experience of this spiritual world, where reality we miss by our incessant habit of ignoring it from childhood, has to be gained by children by fully living in it and not through the medium of theological instruction" (Tagore, 1988, pp 27-28).

Both Tagore and Gandhi's philosophical background included traditional yoga and meditation practices as a powerful tool for character building. Gandhi works on the education system emphasized the practical feasibility and financing of the structures of educational institutions. Therefore, meditation and yoga in his written concepts. For Tagore this was also incorporated into their pedagogical concepts.

The development of virtues and character is believed to be more important than pure factual knowledge. Because facts can change over time and can be looked up anyway very fast in the internet if necessary. But it is more important to build the mind and the character that has to deal with the facts, especially in the early years of life, as these pre-setting influences and guides the whole life and is more difficult to change later. Facing today's problems, also regarding nature aspects, Tagore's concepts don't seem antiquated, but fresh and worth thinking about especially when it comes for an adjustment and modernization with an Indian touch of the education system.

Both considered the development of virtues and character to be more important than pure factual knowledge. Because facts can change over time and today can be found very quickly on the Internet if necessary. Therefore, it seems much more important, especially in the early years of life, to build up the spirit and character that knows how to deal with the facts, since these pre-attitudes influence and guide the whole of life and are difficult to change later. In view of the diverse problems that arise from globalization, not exclusively in relation to natural aspects but furthermore of economic, cultural and sociological nature, especially Tagore's concepts by no means seem antiquated, but fresh and worth considering, especially when it comes to adapting and modernizing the education system with an Indian touch.

1.1.2.8 Education in Independent India

The school system in India evolved from the British system. After the Independence of India, education was regarded as a potential instrument of social change and national upliftment. It was taken as a vital factor of the national progress and security.

The first prime minister of independent India Jawaharlal Nehru (in office 1947-1964) saw the transformational power of education. By studying the history of different nations, he found different degrees of freedom of spirit and on a social level. For the West he found a "limited freedom of belief", due to the influence of religious dogmas, but a "greater flexibility of social structures in Europe than in other parts of the world. In China religion had a more limited role and there was greater flexibility of mind as compared to Europe or India – reflected in a social equilibrium that kept China stable and unchanging for long periods. In India by contrast extraordinary freedom of the mind was persistently juxtaposed with the most rigid social forms" (Nehru, 2010, p. XXIII). Like Tagore, he found that the Indians had a great ability to absorb various influences and create something new from them, and he wanted to use this ability. His vision was to incorporate the different historical experiences into a direction "towards both freedom of mind and of social existence" (Nehru, 2010, p. XXIII).

Regarding the education system, Nehru insisted on the need for a change to meet the needs of the new national goals: (a) Democracy, (b) Secularism, (c) elimination of poverty,

(d) to create a socialist society, and (e) to create national integration (Naik, 1965, p. 78-79). These have been the major concern of the Government of India at the national and state levels, and increasing attention has been paid to rebuilding and reorienting the education system (India, 1966).

At the time of independence “less than one fifth of the population was literate” (Mooij, 2008, p. 508) and building schools and getting more and parts of the population into the formal schooling system was the first priority.

The language of instruction had been changed to the mother tongues of the various parts of India, Hindi, if not first language, became second and English third language for most of the states.

The Kothari Commission (1964-66) had the following four main topics on the agenda: Increase of productivity; Promoting social and national integration; Education and modernization; Development of social, moral and spiritual values. We see moral and spiritual values already was at a high priority for the national education system. On the basis of these Commission guidelines, the first national educational policy with a common educational structure was adopted by most of the states in 1968 (Mohanty, 2002). The commission established the “10+2+3“-system⁹¹ in which for classes five and higher, the subject “moral studies” was compulsory.

**Table 3. Segmentation of Indian Schools by means of level of education
(By Researcher, Source: Ghosh, 2014)**

S.No.	Level of the School	Classes/ Grades	Age (in years)
1	Pre-Primary	Pre-School/Kindergarten	1.5 - 05
2	Primary	I to V	06-11
3	Upper Primary/ Middle	VI to VII	11-14
4	Secondary	IX to X	14-16
5	Higher Secondary	XI to XII	16-18

⁹¹ The 10+2+3 pattern of education in India refers to 10 years school education, 2 years junior college or intermediate and 3 years bachelor’s degree.

The segmentation of Indian schools by means of level of education is given in table 3; it follows the British structure. Primary school consists of grades I-V (ages 6-11 years), middle or upper primary school consists of grades VI-VIII (ages 11-14 years), secondary school consists of grades IX-X (ages 14-16 years) and higher secondary⁹² school consists of grades XI-XII (ages 16-18 years). Primary and middle school are compulsory for every student.

Over subsequent years, several policies have been formulated by the Indian government to ensure the gradual increase in literacy level with a close monitoring of the quality of education. The struggle in the decades after independence was to build enough schools and get the children to school, as many stayed away from school and in the fields to help their families raise their incomes. That mission is almost complete, and education and literacy rates are also high in rural areas today.

Several committees and commissions were required to review the educational problems and to make recommendations how to bring the desired changes in the structure and strategy of education.

“At present, the number of institutions (of higher education) in India is more than four times the total number of institutions in both the USA and Europe. However, the average size of an Indian higher education institution in terms of enrolment numbers is much smaller (500-600) to that of Europe and the USA (3,000-4,000) and China (8,000-9,000).” In India “the institutions of higher learning are considered the most important agency of social change, social transformation, and entire development of the country” (Choudhary, 2008, p. 50).

But still, the enrollment rates of the poor remain to be one of the biggest Indian issues and problems of India’s education. “Despite the intention at that time, even laid down in the Constitution, that all children should go to school, it was not until the 1980s that relatively concerted action was undertaken in response” (Mooij, 2008, p. 508). The National Policy on Education in 1986 incorporated an international orientation, emphasized the equality goal and job-relevance of higher education, beside improvement and expansion goals. (Power, 1995, p. 40; Ghosh, 2000a, p. 184; Mukhopadhyay, 1999, p. 54-55). Elementary

⁹² Higher Secondary stage also known as pre-university, intermediate or junior college stage.

education was prioritized, and the importance of universal education restated. The number of the teacher and learning equipment was increased in the following operation Blackboard. In the 1990s the District Primary Education Program (DPEP) and in 2000s the Education for All (SSA, Sarva Siksha Abhiyan) campaign were launched with focus on getting the upper primary (classes 6-7) enrolled, (Mooij, 2008, p. 508-509). The campaigns showed results.

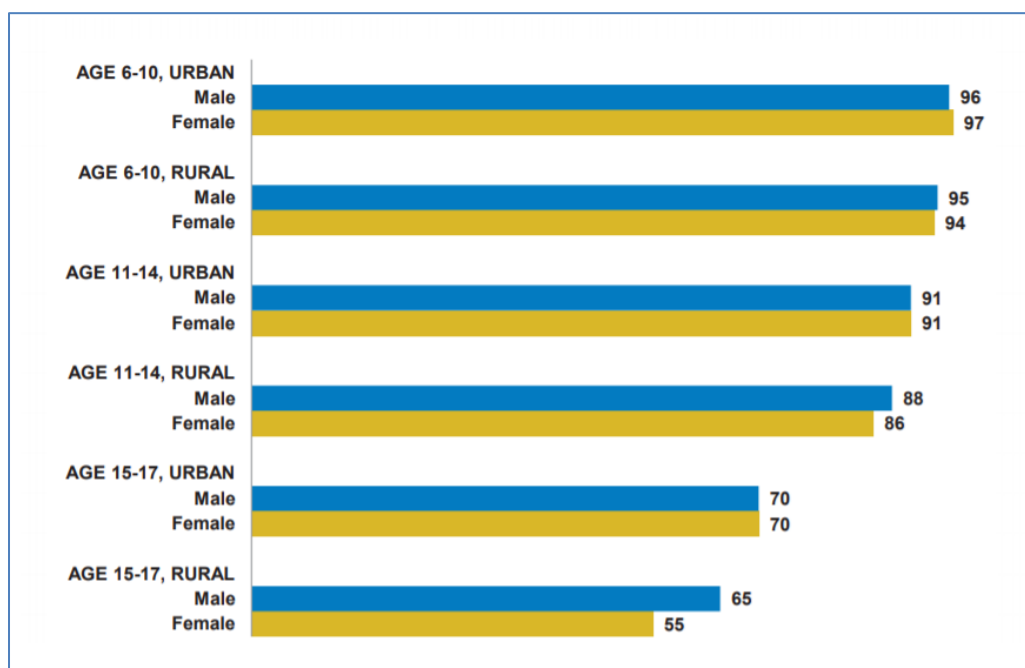


Figure 11: School Attendance by Age, Sex, and Residence Percentage of children aged 6-17 years attending school (Source: IIPS, 2017 NFHS-4 Figure 2.7)⁹³

School attendance by age, sex and residence percentage of children aged 6-17 years attending school showed in figure 11. “Eighty-five percent of children aged 6-17 attend school, including pre-primary school (86% of males and 84% of females). Almost all (95%) males and females aged 6-10 attend school, including pre-primary school. This percentage decreases to 88 percent for children aged 11-14 and then drops further to 63 percent for children aged 15-17. There is almost no difference in school attendance by

⁹³ The National Family Health Survey (NFHS-4) done by the Ministry of Health and Family Welfare for the years 2015-2016

males and females at age 6-14, but males are more likely than females to attend school at age 15-17 (67% versus 60%). Urban-rural differentials in school attendance are minimal at age 6-10 but widen at older ages.

The median number of years of schooling is highest among those who do not belong to scheduled castes, scheduled tribes, and other backward classes (6.4 years for females and 8.2 years for males). The median number of years of schooling is lowest among Muslims than for other specific religious groups (3.7 years for females and 4.8 years for males). The percentage of the household population with no schooling is higher in rural areas than urban areas (37% versus 19% for females and 18% versus 9% for males)” (IIPS, 2017, p. 20).

Critics point out that the District Primary Education Project (DPEP) could not have been done without the funding’s provided by foreign agencies allowing the World Bank to shape India's education policy. In addition, “there is every chance that sudden pumping of so much of fund will only accelerate the process of corruption, which is embedded in the education system, and spread to the grass roots level” (Acharya, 1997, p. 605).

Andhra Pradesh Teachers reported in group discussions about the pressure on them, which made them to falsify school enrollment numbers in order to achieve the goals of the political agenda. Because of the targeted pressure they receive from District and Mandal Education Officers (DEO, MEO) they do not report child labor even if it is present (Mooij, 2008)⁹⁴.

⁹⁴ During focus group discussions, one of the teachers mentioned that “The MEO has made it clear that he wants to have 100% enrolment, and zero percent child labor. But there are two types of child labor. One type consists of children who do not like to go to school, and then their parents send them to the field. This can be eradicated. But the other type consists of sons in female-headed households. The family would starve without the son’s income. We cannot force these children into the school. But the DEO has told the MEO that there should be no child labor. The MEO organized a meeting and said: “All the other mandalas have 100% enrolment. We are much ahead. Why don’t we have 100% enrolment? I do not know what you do, but I want 100% enrolment”. So, what we do is that we state that there is no child labor, even when there is” (Mooij, 2008, p. 520).

Jos Mooij attests that “nowadays children do go to school at some point in their childhood”. Poor people value education as a step towards development. School accessibility is increasing, but there is also an increasing social division within the educational system. Poor people send their children to native language (Telugu) government schools, also not all for all the possible years. While middle class families tend to send their children to private schools with English as a medium of education. “Almost a quarter of the school-going children (classes 1–7) in Andhra Pradesh goes to a private school nowadays. In Hyderabad⁹⁵, this is about two thirds” (Mooij, 2008, p. 515).

Teachers of government school now also see themselves as part of this new middle class, as the wages have improved since 1998 (Fifth Pay Commission). Teachers tend to move from rural areas to the cities where their children go to English speaking private schools, while they themselves commute to the rural villages for their job as government schoolteachers. Or they send their children boarding schools or to relatives in bigger cities, where English-medium private schools are available. The lack of appreciation the teachers give to the government schools when it concerns their own family, they also experience on the other side as shrinking respect of their role as teacher in the rural community. “In other words, their rise in economic status has gone together with a decline in their social status” (Mooij, 2008, p. 514). The respect that was given to a teacher with his role in the earlier days, has now to be earned through sincere and hard work.

The teachers feel a lack of appreciation from the families of the students, but even more they feel a lack of appreciation from higher officials. Government teachers are professionally trained. The government school system is highly centralized and does not provide much space for individual decision making on principal or teacher level. This centralized set-up is internalized by the teachers “and many would be reluctant to take more responsibilities” (Mooij, 2008, p. 518).

⁹⁵ Hyderabad was the capital of Andhra Pradesh, but now Telangana after the state was separated. In 2014 the state departed into Andhra Pradesh and Telangana, with Hyderabad belonging to Telangana.

The same study found a difference between old teacher and young teachers in Government schools. The motivation of older teachers was more idealistic. Senior teachers joined because teachers were respected, and they thought to make an important contribution to the development of society when molding children into good citizens.

While the younger teachers had more pragmatic motives to become a teacher. They saw it as a secure government job to earn their livelihood. Some said that they “had no other option” (Mooij, 2008, p. 512). Mooij saw connections to “Gandhian ideology of simplicity and truthfulness”. While the younger teachers mentioned ideals as “joyfulness of the learning experience, [...] child friendly and playful teaching methods”, what Mooij identified as “clearly inspired by the jargon of DPEP and SSA programmes” (Mooij, 2008, p. 513). Mooij concludes the necessity of a new professional ethos and culture (Mooij, 2008, p. 521).

However, the state schools are losing acceptance in the communities, and many families who wish their children a social advancement send their children to private schools. They are considered capable of providing better education. Although the teachers in the state schools have formally better teacher training and qualifications. Most of these private schools have English as a medium of instruction. English is considered to be useful in pursuing a potential international career and for studies abroad; USA and Arab states are the most popular countries of choice. Business sectors that have international customers, especially IT and call center service providers, also need English-speaking employees and pay good salaries compared to Indian standards. In most countries, the way people go to school is decisive for life. In India, sending children to state schools or English-speaking private schools appears to be an important turning point in determining the child's future social development. However, the career opportunities of individuals abroad also mean that valuable high potential human capital is withdrawn from the country if many well-educated young people leave the country instead of contributing to the country's development. In order to offer comparable or better prospects in India, economic policy on the one hand and education on the other hand are required. In order not to let the state school become a school type of second choice, concepts are being discussed to improve the quality of common education.

In addition, there is the feeling that the school system needs to be Indianized, i.e., to bring concepts into the school that are more in line with Indian culture and Indian self-identity. Already the Kohari Commission in 1964 expressed their hope that people's pursuit of "material affluence and power would be subordinated to that of higher values and the fulfillment of the individual. This concept of the mingling of 'Science and Spirituality' is of special significance for Indian Education" (Srivastava, 2015, p. 1024).

In 1975 Charles Heimsath stated that the Indian education system was changing but had not yet completed its change.

"India may now be adjusting its intellectual weight from one leg to the other, from commitment to modernity as defined by Westernized Indians and outsiders, to a more natural reliance on the pragmatic solutions to problems based on formulas embedded in the culture" (Heimsath, 1975, p. 367).

Since independence, Indian scholars have tried to modify and reform the educational system, which to this day still largely corresponds to the British system. Conceptual masterminds such as Mohandas Karamchand Gandhi and Rabindranath Tagore have developed concepts for a change in the educational system. However, their concepts have not been put into practice for several reasons and political pressures. Although the concepts were conceived several decades ago, they are seen as possible avenues for renewal. However, they require an adaptation to today's conditions. But an ultimately independent "Indian way" of education has not yet been fully found and defined. The balancing act here is, on the one hand, to tie in with culture and traditions and, at the same time, to meet today's and, above all, future demands on education. Education policy must always be forward-looking; Changes only show their effects years later.

The future of education is seen in the additional development of skills and character traits that promote independent learning, increase social skills and the ability to work in a team, and strengthen differentiation. Creativity and intuition are other important exemplary properties that promote innovative processes. The existing education system in India has so far placed great emphasis on memorizing facts and neglecting the urgently needed second pillar of personality development. Ancient education placed a greatest emphasis

on personal development. Gandhi's and especially Tagore's concept corresponded in their basic spiritual understanding to the Indian self-image. In India the social representation of meditation views it as a method for character formation and personality development. Therefore, a modern, adapted, easy-to-learn variant of classical meditation⁹⁶ could be a feasible way of developing the required properties and character traits.

1.1.3 Indian public policies on yoga and meditation and its promotion in education, scientific research and the health mix

Already by the first Indian government, run by Jawaharlal Nehru, India's first Prime Minister, several initiatives and programs regarding alternative health methods were launched. Nehru played a very important and critical role in promoting the scientific study of Yoga, he (as many Indians) understood and practiced yoga as a system for disciplining the body and mind and the potential of it for improving physical and mental wellbeing. In 1952 and 1953 Hatha yoga exercises were established as a part of India's health education and included in the 'National Plan of Physical Education and Recreation'. Meditation and yoga have since returned to the canon of applied medical health techniques in India and have continued to be promoted.

The last and current Indian government has created special ministries and departments for alternative health care such as yoga and meditation. These methods complement the allopathic medical methods, which are also part of the national health strategy. The International Yoga Day has raised international attention to this topic to a new level.

⁹⁶ Classic forms of meditation such as Patanjali Yoga place very high demands on discipline and lifestyle, which makes it difficult to integrate them into modern everyday life.

1.1.3.1 The International Yoga Day

The United Nations installed 21st June as the *International Day of Yoga* on the 11.12.2014, since then it is committed yearly on the 21. June. The UN Resolution was

“noting the importance of individuals and populations making healthier choices and following lifestyle patterns that foster good health, Underscoring the fact that global health is a long-term development objective that requires closer international cooperation through the exchange of best practices aimed at building better individual lifestyles devoid of excesses of all kinds, Recognizing that yoga provides a holistic approach to health and well-being, Recognizing also that wider dissemination of information about the benefits of practicing yoga would be beneficial for the health of the world population” (UN, 2014, 69/131).

This can be seen as “symbolic of yoga's truly globalized status today” (Mallinson & Singleton, 2017). The international acceptance of yoga as a tool for physical and spiritual health and wellbeing was the result of the request made by Narendra Modi, the Prime Minister of India to accept the relevance of ancient Indian wisdom in Yoga. In his speech delivered at United Nations General Assembly (UNGA), Modi said that:

“Yoga is an invaluable gift of our ancient tradition. Yoga embodies unity of mind and body; thought and action; restraint and fulfillment; harmony between man and nature; a holistic approach to health and wellbeing. It is not about exercise but to discover the sense of oneness with yourself, the world and the nature. By changing our lifestyle and creating consciousness, it can help us deal with climate change. Let us work towards adopting an International Yoga Day.”

-Narendra Modi, Prime Minister of India
at 69th session of United Nations General Assembly on September 27, 2014.

Both prime ministers are known for practicing hatha yoga. They personally know the benefits it brings to the body, but particularly appreciate the effects it has on the mind. India is by population the largest democracy in the world. A political leader cannot embed his own views about a healthy life for body and mind on the population, if this were just personal ideas and not the shared opinion by large groups of the population. These views

are shared by many and are considered common knowledge in India. The Indian health system can be seen as an expression of this common opinion.

1.1.3.2 The Ministry of AYUSH and integration of AYUSH into education

Apart from conventional biomedicine (allopathy) India's health systems support the usage of traditional or “alternative” ways of healthcare. These healthcare systems are mainly Ayurveda, Yoga and Naturopathy, Unani, Siddha, Homeopathy⁹⁷. Their initials gave the name to the Ministry of AYUSH. Already in 1995, the Department of Indian System of Medicine and Homeopathy (ISM&H) was founded, in 2003 it was renamed as Department of AYUSH and in 2014 it was made a ministry to further “ensure the optimal development and propagation of Ayush systems of health care”⁹⁸.

AYUSH's activities are three-fold:

- Medical pluralism
- Ayush research
- NITI Aayog action agenda - the importance of mainstreaming AYUSH's potential for holistic health.

The focus of AYUSH is on preventive and promotive healthcare as well as providing a holistic healthcare. There is a certain rivalry between conventional biomedicine and

⁹⁷ Ayurveda is one of the major branches of Indian medicines which believes in primitive and natural products from the plant and animal world to be used for healing and treatment of various diseases. While, Naturopathy does not believe in medicines or other external treatments, rather it emphasizes on curing of human mechanism naturally through diet and other natural therapies like, mud bath, acupuncture, etc. In the same way, Unani is an ancient herbo- animo- mineral medicine system which cures human holistically. Similarly, Siddha Medicine, well-known in Southern part of India, revitalizes and rejuvenates dysfunctional organs that cause the disease. Even Homeopathy treatment is based on natural system by curing the diseases from the root and the ailments are cured with the substances that have similar effects. Moreover, Yoga is a holistic approach to live a healthy and peaceful life.

⁹⁸ Government of India, Ministry of AYUSH. Retrieved from <https://main.ayush.gov.in/about-us/about-the-ministry> on 30/05/2021.

traditional / alternative health care, sometimes to the extent that delegates of one system neglect or downplay the effects of the “other” system. To promote an exchange between traditional medicine and conventional biomedicine an Integration of an AYUSH module in the curriculum of MBBS (Bachelor of Medicine and Bachelor of Surgery) is discussed (Patwardan, 2013).

Along the educational institutions an integration of AYUSH into the syllabus is promoted. "Yoga and Meditation should be mandatory in the syllabus of all schools/colleges. In this connection, the University Grants Commission (UGC) has planned to induct yoga into the curriculum of public-funded universities, [...] the apex regulatory body for higher education has prepared a proposal to introduce BSc and MSc in Yoga in all 40 central universities [...]. In order to pursue education and practice in yoga, it is proposed to establish centers and departments of yoga in the public-funded universities". (Semwal *et al.*, 2016, p.17).

The majority of the population appreciates the “alternative” methods of healthcare. Indians are very pragmatic in this respect⁹⁹. They use allopathic medicine when it seems more helpful to them, because it is considered stronger and faster than traditional medicine, but they avoid it, when possible, because of its side effects. “The value of AYUSH systems in healthcare is widely recognized” (Darshan & Patwardhan, 2017, p. 137).

The alternative health approaches are seen as real alternatives to allopathic medicine - by the population and by the government. They are not just a cheap substitute when allopathic medicine is unavailable or more expensive. For many people, they are part of a healthy lifestyle that, if followed, is less likely to cause disease. Allopathic medicine is considered in many cases to be used when unbalanced lifestyle habits have already led to serious illnesses. Of course, there are also congenital diseases, but diseases often result from certain behaviors that make you sick. According to yoga, meditation and Ayurveda, illness is a sign or a long-term consequence of an imbalance in the subtle systems. All three methods aim to balance. The primary approach is initially on different levels - Hatha Yoga on the physical level, meditation on the spiritual level and Ayurveda

⁹⁹ Of course, there are individuals who would only use conventional biomedicine, just as there are people who would never do so. But the majority has no such dogmatic, ideological exclusion categories, but makes decisions on a case-by-case basis.

on the biochemical level, which is addressed by appropriate nutrition. Ultimately, however, all three methods also have an effect beyond their primary level of approach to the other levels, where they have an equalizing and balancing effect.

The importance of these health branches is increasing and the structures are being facilitated. “Many reforms in administration, research strategies, nature of practice and education are already underway at the Ministry of AYUSH” (Darshan & Patwardhan, 2017, p. 137). And the teachings on meditation, yoga and other techniques are not taken as dogma or self-evident wisdom. They are questioned and checked with modern scientific means. New practical fields of application are also sought, examined and highlighted.

1.1.3.3 The Science and Technology of Yoga and Meditation (SATYAM) – program

The Ministry of Science and Technology started in 2015 the research program “Science and Technology of Yoga and Meditation” (SATYAM). SATYAM is a welcome platform to work out with comprehensive scientific research in the field of Yoga and Meditation to provide a scientific recognition to Yogic and Meditation Practices as well as aware the people about their immense benefits in all aspects of a human being. The major aim of this program is to encourage scientific research. It fosters research on the major themes, such as, studies on the effect of Yoga and Meditation on Mental Health and well-being, research on the effects of Yoga and Meditation on the basic processes and mechanisms of body, mind, and brain.

The SATYAM program observes and encourages large fields of research:

“In ancient Indian medicinal system, yoga practice is described as the link between the individual and the universe. Yoga and meditation can play an important role in our life because these help in controlling the function of our mind i.e., ego, desire and intellect. Yoga is a well-known physical, mental and spiritual practice since the ancient time and still benefitting people globally. It helps in the expansion from narrow egoistic personality to the all-pervasive, endless and delightful state of reality. The practice includes physical postures, regulated breathing, meditation and relaxation, which is helpful in improving lifestyle and in bringing down the prevalence

of medical emergencies like psychological, neurological and metabolic disorders. Moreover, it helps people to remain happy and healthy even with many life stresses” (Semwal *et al.*, 2016, p.14).

Indians do not use the term science as specifically as for example European academics would. Although meditation is not considered a science in Western academic understanding, Indians use the word science in reference to meditation. When there is something to learn, especially when there is much to learn, they call it a science. Despite the practice of meditation appears to be fairly straightforward, there is still a great deal that one can learn about the processes within an individual¹⁰⁰. In the same way meditation is not a technology, because there is no machine or computer involved. Actually, it would be more appropriate to call meditation a technique. But technique may sound a little bit too small to Indian ears for something as great as yoga and meditation. In addition, the creators of the program must have looked for a meaningful acronym. Satyam has a Sanskrit meaning and is associated with the search for the absolute or higher truth in Hindu and yoga philosophy. Following the "father of Yoga", Patanjali, satyam is one of the rules for an ethical life and means truthfulness. Perhaps these are reasons why Indians do call a government funding program for yoga and meditation research the "science and technology of yoga and meditation" and this is not a cause for any concern in India.

On the contrary, it expresses and is understood in India as a serious effort to research the traditional knowledge with modern scientific methods for its truth content and to examine modern applications for it.

Summary and Conclusions regarding Social Context

Meditation is part of Indian culture. It has been part of the educational system from the earliest known records and writings, mainly focused on personal development. Over the centuries it lost its importance in the school system for a variety of reasons. But although it has not been practiced en masse over the centuries, it has always been considered

¹⁰⁰ Just as normal breathing seems pretty easy, so easy that most of the time we don't even notice we are breathing, there is a lot more that could be known about it.

valuable by the majority of the population. Meditation and yoga are an important part of India's self-image. They are slowly experiencing their renaissance in society as a future-oriented technique whose potential for renewal should be used. Since 1947 the government has been paying increasing attention to the various techniques (there are many types of meditation). Important Indian techniques for improving health and personality development are promoted and researched according to scientific standards.

This cultural legacy is not seen as an identity-building ritualistic method for backward-looking traditionalists, but as an instrument that could be decisive for future-oriented adaptation and improvement of the education and health system. The Indian social representation of (true) meditation includes a holistic personality development, which in modern parlance could be described as sustainable character formation. Meditation could strengthen qualities that are neglected in the existing education system, but which are seen as skills of decisive importance, especially with a view to common future scenarios.

The perceptions and ideas of meditation are different in different countries. The socio-cultural context shapes this perception. And this context will also determine which countries are better suited to integrating meditation techniques into national health or education policies.

The common great philosophical social concepts form the common basis for societies. Their influence is far-reaching as they (unconsciously) form the basis of everything in this society. That is why they fundamentally determine the way people think and act in society. In Europe philosophy was separated into philosophy and religion, while in India they remained intertwined. There was no secularization like in Europe and to this day philosophy and spirituality in India are not separate and Indian society and its everyday life are permeated with spirituality. This impacts and shapes the social representation of meditation.

The reasons for the different understandings of meditation in East and West that are recognizable today are also due to the fact that the social representation of reality in India differs fundamentally from the western social representation of reality. These differences of perception can be seen for example in the ideals of societies. What can be regarded as

an expression of individuality and zest for life in the West can be regarded as an expression of wrong priorities, a lack of morality and devotion to bad habits in Indian society¹⁰¹. Examples like the perception of clothing styles were given in the beginning of this chapter.

The social understanding of meditation as a beneficial practice for personal development has always been present in the Indian social context. People socialized in the west like to understand (Hatha) yoga as a beneficial exercise for the body and meditation as a relaxation time for the mind¹⁰². The western focus is on well-being (self-enjoyment) and health aspects; More far-reaching effects of mediation are viewed with great skepticism in the western world¹⁰³. This may be because meditation does not exactly fit the Western dualistic distinction between science and spirituality, as some of the effects of meditation can be measurable through observation, but the actual processes that go on in meditation are not measurable and remain especially for the not-meditating somehow unclear.

In the history of India's education system meditation played an important role in the Gurukula and Brahminical education system. The effects of meditation were found to be nourishing for clearing the mind, stabilizing the attention, and improving intuition, memory and learning processes of the students as such. It was appreciated to create a positive learning atmosphere and a harmonious social living. The personality- and character-building effects of meditation were of great value for education.

The Buddhist education system (evolving after the teachings of Siddhartha Gautama Buddha) also practiced meditation in slightly modified variants. The Hindu and Buddhist forms of meditation practiced today, derive from these two streams of meditation that were

¹⁰¹ Of course, there are also different ideas about what to wear within every society. However, there are also major differences between the various societies. For example, the acceptance rates for mini-skirts as proper clothing in European countries, such as France or Italy, will be much higher than the acceptance rates for mini-skirts as decent clothing among Indians.

¹⁰² Of course, this does not apply to all individuals, since attitudes, opinions, etc. differ from individuals; usually according to the normal probability distribution, with small parts of extreme positions on the edges and large parts of moderate positions in the middle.

¹⁰³ As the chapter about meditation will show, this skepticism is (partly) legitimate, as there are differences in meditation and yoga practices and not all practices are in the same way beneficial or effective. To a large part it also shows the unfamiliarity and the little knowledge of the Western society about meditation (compared to India), which is a result of fundamental choices that philosophy, science, and religion/spirituality took in the past as well as their worldly expressions in politics, education, and culture.

integral part of the regular higher education system¹⁰⁴. The, in the Moghul era following, Muslim education system practiced Sufi meditation in the Kangah's. The Brahminical schools and especially the Buddhist school had been partly destroyed by the emperors. Moghul *Jalal-ud-din Muhammad Akbar the great* appreciated and allowed Hindu teachings and scriptures and Sanskrit language back in the education system.

The British education system (Maccaulyism) refused the classical Hindu and Sanskrit teachings and imposed an English-speaking school system with strong English cultural imprint on it. The English schools were visited by the Indian elites in the cities, the rural areas and lower classes were left behind. Meditation and yoga did not play any role in the British education system.

After the Independence there were plans to create a new Indian education system, but only small modifications of the British system were made. The instruction language at government schools was changed to the local state languages and Hindi and English became second/ third language. The educations systems first task after Independence was to conquer illiteracy. This task took until the recent years (2015-2020) to bring the illiterate rate down to nearly zero percent. A remaining problem is the enrollment rate in the higher classes, especially in the rural areas. While the enrollment in the first five classes (age 6-10) is around +/- 95%, for classes six to nine (age 11-14) it goes already down to ca. +/- 87% in rural areas, while the higher classes till 12th class (age 15-17) are attended only by 55% of the female and 65% of the male students in the rural areas. The school enrollment goes down in the higher classes because the children go to the fields either because they do not want to go to school, or in other cases, the family would starve without the child's income. Whilst the awareness that school education is a chance for better economic situations is there also throughout the poorer classes. Although, the social gaps remain or do even grow. The middle-class families preferably send their children to private English medium schools as they see better chances for them to study further or in the job market.

¹⁰⁴ The Brahminical and the Buddhist education system were of religious nature, but so were all the higher education systems in the world at that time.

In 2008 about a quarter of the class 1-7 students in whole Andhra Pradesh went to private schools; in Hyderabad¹⁰⁵ it was about two thirds. The appreciation of government school has been afflicted and went down in the view of the parents. Surprisingly also in the perspective of government school, teachers in rural areas who have many a times a better qualification than private school teachers; the government schoolteachers tend to send their children also to private English schools even in distant bigger cities, as these are not available in the rural areas. These teachers' prestige has gone down in the view of the parents of the rural areas, as the feeling of belonging and caring for their community has gone. Years back a teacher had authority ex officio and was a well-respected person in the community that people asked for advice in many things, even not related to school, but today the scenario is changed.

Mohandas Karamchand Gandhi and Rabindranath Tagore were both social intellectuals, they lived at the time of the freedom movement and were visionaries and ambassadors for an independent India. The personification of the non-violent struggle against the British rulers (Gandhi) and the Nobel Prize laureate in literature (Tagore) had visions of the future that, in their opinion, could be realized through appropriate training for the younger generation. Their visions had many issues in common, but also their discrepancies. They focused on what would be beneficial for the students and what abilities they would need to adopt to become good citizens of the new and free India. Both wanted to change the education much more fundamentally than it actually was changed after the Independence. First and foremost, they strove for a true Indian concept that looked at social reality from both a philosophical and an economic perspective. To this day, their educational concepts are referred to as ideals in the discussions about a truly Indian mode of education. Both viewed the existing system, with an emphasis on memorization of book knowledge, as inappropriate for free citizens in a country that in large parts had to be rebuilt from its base. The country needed practical citizens who can read the situation they are in with a bigger picture in mind in every area of society. In addition, they should act accordingly. These also seem to be appropriate requirements for a modern education system, as many great societal changes are emerging and it is very likely that different methods and thought

¹⁰⁵ At that time Hyderabad was the capital of Andhra Pradesh and had ca. 6,8 Million inhabitants. In 2014 the state departed into Andhra Pradesh and Telangana, with Hyderabad belonging to Telangana.

patterns will be required than those that created the challenging situations (e.g., climate change, immigration, social gaps, species extinction ...).

Gandhi's plan included a system of self-sustaining schools. It was conceptualized for that time when the economic situation was much worse than today. The proportion of families who could not afford sending their children to school because they needed the income was much higher, and the state did not have the infrastructure of schools and teachers and did not have enough money for neither of them. So, Gandhi's concept included practical labor, instead of having sports classes the students should have their workouts on the fields, combined with some practical biology lessons. This would provide practical knowledge, foster learning much more than reading from books and support the income of the parents. Similar ideas he had about craft lessons, instead of manufacturing some show case objects with the students they should produce real products that could be sold. Gandhi did the calculations of time spent by the students on this projects and money earned through it and he figured out that done in the right proportion of time spent on learning through work and on classic school learning, the school system (or the students) could provide their families with a reasonable extra income, that supported their situation, while on the other hand it could pay the schoolteachers. Gandhi was a true visionary for his country but also for education.

Modern school concepts realized the importance of applying the knowledge input in practical applications. Today this is called project work and considered of extremely high value for the learning and education process, as it fosters also self-reliant and creative thinking, social competence and many other "soft-skills" that are highly appreciated in the job-market later. If school projects today would include a market component, that the produced goods must be sold, the necessary material to be bought, production process has to be organized, supervised and optimized this would make many students, parents and later employers happy. Gandhi's critics had the fear that such a system could lead to the exploitation of the students as cheap labor, as the critics feared teachers or higher officials could misuse the system to make some extra money. This fear was not out of thin air, as bribery and corruption are amongst the biggest challenges for India today. Gandhi being himself a person that lived to his high ideals through and through may have extrapolated his goodness a bit far, but he believed in the general potential of

righteousness and moral behavior (dharma) in everybody. To put his educational concepts of self-sustaining schools into reality, it would need either effective concepts of control or better people.

Tagore's emphasis was on creating an environment that fosters the learning and education process. A place where the children do not feel like put into a cage and where they don't have enough space to move. He considered nature to be the perfect surrounding where the students mind, and body could be free and open itself to the elements. This free teaching atmosphere outside under trees in the shadow would be especially beneficial for young students that need physical activity from time to time. He also preferred practical and inspiring learning instead of the memorization of bookish knowledge. He integrated excursions into the schedule. On the excursions all senses and the curiosity of the students were activated, they could spontaneously ask questions and talk to the teacher what they discovered and what they want to know. Therefore, a close teacher-student (guru-sishya) relationship the contained a lot of trust was necessary. This and other parts from the ancient Gurukula style of education were integrated into Tagore's vision. He supported bringing back physical and spiritual aspects into his holistic view of education. He considered the actual education as limited to the intellect. Therefore he encouraged gardening and social works for practical learning, to form the character and to foster soft skills.

All in all, Tagore's vision did not lay so much emphasis on the structure and organizational elements in the education as Gandhi did, for Tagore learning had to be filled more with playfulness and curiosity. An important concern for Tagore was the openness of the mind and the acceptance and the appreciation of diverse cultural influences, therefore celebrations of the diverse cultures and diverse religious festivals were celebrated in his two school projects. Generally, Tagore wanted intercultural exchange. In this point he went much further and was much more visionary than Gandhi, who concentrated much more on coping with the given social reality of that time. For Tagore English as medium of instruction was thinkable¹⁰⁶ as it would be supportive for the intercultural exchange that he considered so beneficial. On a global scale Tagore wanted to encourage intercultural

¹⁰⁶ Whereas Gandhi was strictly against English as a medium of instruction.

exchange between the higher evolved technical knowledge of the outer world of the West with the higher evolved knowledge of the inner world and the wisdom of the East. This he envisioned to be most beneficial for both cultures.

What makes the educational ideas of Gandhi and Tagore so appealing to Indian educators even today, is that their ideas were based on the spiritual understanding of the world and the individual, which is dear to many Indians. Because Tagore himself had opened a school where he put his concepts into action, these spiritual aspects of education were much more evident within his works, than in Gandhi's analytical search for the practicality of a system for the masses of the population. But Gandhi's personality, that was grounded in Indian spirituality¹⁰⁷, is well known and therefore connected and visible in his pedagogical conceptions for many.

The importance and relevance of Yoga and Meditation in India today can be seen in various highly ranked initiatives dedicated to them. The Indian government did a lot to promote the integration of traditional Indian (Eastern) wisdom on the international stage and encouraged and strengthened its utilization on a national level. In 2014 the *International Yoga Day* was established by the UN and is performed since with great public resonance worldwide on the 21. June. In 2015 the Ministry of Science and Technology launched the *Science and Technology of Yoga and Meditation (SATYAM)* program to encourage recent scientific research about Yoga and Meditation. A whole ministry (Ministry of Ayurveda, Yoga and Naturopathy, Unani, Siddha, Homeopathy – AYUSH) is dedicated to promoting medical pluralism and research of these traditional Indian healthcare systems, with a large focus on promoting healthy lifestyles and natural ways curing. These “alternative” systems are not to replace the conventional biomedicine (allopathy) in India's health system but to enlarge it. Together they are seen as a holistic mix of healthcare. Yoga and Meditation are part of this holistic approach as they seem to promote a healthy lifestyle understood in the health-sense of the WHO as physical, mental, and emotional well-being.

¹⁰⁷ Although Gandhi's spiritual understanding may have differed from Tagore and despite there is no conforming Indian spirituality, but as many different personal spiritual understandings as there are Indians, it is still called Indian spirituality here, because there are nevertheless large overlaps of the various personal understandings of Hindu spirituality – just as it might be for European Christians.

In addition, there are many initiatives from the government to integrate this holistic knowledge in the syllabuses of medicine students, and Yoga and Meditation in universities, schools, and colleges.

Yoga and meditation are an important part of the Indian social context. They have been imparted in the educational system for most of Indian history, and were only without consideration in the pre-independence history. Since the second half of the last century, the political will to re-embed yoga and meditation in the education and health system has been growing. They are considered to be important methods that should be reintegrated into the systems as they might be foster a positive social change. They are initially seen as useful for the individual, but then considered to have an impact on society in the subsequent process. As a result, they could be engines that support social change and social adjustment to the needs of our time.

1.2 Social Change and Social Influence

Education is the instrument of choice for political regimes to influence, shape and change society according to their agenda. For democratic societies it is important to distinguish between education and indoctrination.

Democratic societies also know the importance of the education system and try to use it to maintain the democratic system. “Sociologists have long since established that education is one of the most important ordering principles governing the characteristics of individuals in modern, large-scale, complex societies” (Inkles & Holsinger, 1974, p. 1). Every society wants its educational system to produce individuals who are considered productive citizens according to the main ideology pursued by society. There are some major challenges for free societies in building such an educational system. They want to create free-thinking, independent individuals who maintain the social system and develop it according to the needs and challenges of the time. But by feeding the young with the ideas of the old, there is the danger that it may become difficult for the coming generation to think outside the box and to change existing structures. There is “evidence that

education leads to differences not only in cognitive content, but also in cognitive style, that is, in the way the individual reasons” (Inkles & Holsinger, 1974, p. 1). Education was found to determine “the syndrome of attitudes, values, and behaviors which distinguish the more modern from the more traditional man” (Inkles & Holsinger, 1974, p. 1).

This can become a critical moment in particular when rapidly occurring changes from outside or inside force the system to make drastic changes. In times of fast and vast changes, it can become a disadvantage if the social system has developed the individuals through the education system too much in the direction of maintenance of the society in its existing form than to promote the skills necessary for adoption and social change within the individuals.

Unfortunately, there is a tendency of the systems to prefer to focus on the (economic) usability of education, for example through the production of knowledge and skills that are valued by this society, for example in the formation of workers, employees or executives.

Instead, it is very difficult to find and promote educational approaches that mainly focus on the free development of the individual's potential, despite school by its formal legitimation often claims to do so. This is especially sad as school is a special setting that has the possibility like no other setting to foster the broad education and personal development. “Holsinger hypothesized that schools, because of their peculiar structural arrangements and the behavior patterns of teachers, provide pupils with certain experiences largely unavailable in other social settings, and that these experiences represent conditions conducive to the acquisition of modern values” (Holsinger, 1987, p. 108). Education has the high potential of shaping mindset, values and character. It was shown that education deeply influences “individual attitudes, in values concerning personal and social relations” (Inkles & Holsinger, 1974, p. 1). The balancing act is to find an educational mix that meets the needs of cultural identity on the one hand. As foreign education systems achieve poorer learning outcomes, because they do not fully correspond to the social identity of the students and, in addition to the learning effort, this hurdle has to be overcome by the student too. In addition, they are not recognized by the existing society for the same reasons, and beyond that, it is feared that foreign values can be transported into the society and that may shift one's own value system. On the other hand, educational elements are needed that promote an unbiased, free individual

development that is free from influence or (unintentional) indoctrination, since a society stagnates and can perish without the capability to adapt to (rapid) external changes. From the Indian point of view, real meditation and yoga (see Chapter 2) have the potential to meet the need to be embedded in the socio-cultural environment and to be free from unwanted influence. Although the question of unwanted influence is viewed as potentially critical, as fake and money-making techniques are also widespread.

In Western cultures, social-cultural embedding and free personal development are viewed differently and even more critically. In fact, meditation and yoga are only specific to humans, no animals can reach this state of consciousness. But they are not culture-specific techniques. Since they relate to the human (subtle) body and mind that are universally equal. Skin color, hair color and other external differences play no role and make no difference in the application. What distinguishes the different cultures, however, is the terminology, the knowledge and the socio-cultural environment.

There are different approaches to how social change comes about and which factors promote social change and which make it more difficult. This is important in the context of this work about meditation, as meditation will be examined with regard to the possibility of initiating a change in the individual, but also with regard to the possibility of changing or influencing the closer social environment of the school population (without this meditating directly). In addition, the docking of meditation practice in the school system also has points of contact with the theories of social change, as it would mean a change in the existing education system, where meditation is not a comprehensive, integrated method yet. Furthermore, these approaches might highlight some reasons for the different social representations of meditation in the different cultures.

1.2.1 Top-Down Approach of Social Change - In the field of status quo, dependency, conformity, idiosyncrasy credit and deviants

In Social theory the model of society can be understood as a machine that produces wealth and power and that is run by influence (Moscovici, 1976, p. 1). The social influence of the functionalist model is a theorization of conformity. Jenness (1932) and Sherif (1935) were amongst the first to study conformity, Asch (1951) is another prominent researcher (McLeod, 2016). It is the widely accepted model and shared by most social psychological orientations, like Gestaltists, Behaviorists, Lewinians and psycho analytics. In this model social systems and the environment are given factors, and individuals are dependent on the group (or society): they show a social reaction towards the group, with the tendency to adapt to the groups values and beliefs (Moscovici, 1976, p. 1). Society exists to fill a gap or to substitute the needs of the individual that are not given to him by nature. "Society plays a role in cases of incompleteness or powerlessness. The proper, complete, and well adopted human being stands on his own feet and has no need for others" (*ibid*, p. 36).

Social Influence is used for and functions as a factor for social control and the maintenance of the status quo. The concepts of group locomotion, cohesion and normative social influence explain how existing systems the tendency have to identify deviants and how they are manipulating individuals with the aim of making everybody alike and confirm to the group core beliefs. The main beliefs are given by the leaders, the most influential part of the group. The more dependent individuals are on the group, the more likely is the tendency to conformism to the group, be it heart fully intended and believed or just as lip service for the sake of acceptance. Even pretending over a long time is believed to convert the firstly non parted beliefs into an accepted and shared opinions.

The dependence of the individual to the group can be observed (and reached) by two kinds. Institutional dependence results from unequally distributed power or at least the believed power status. This can be regarding social status (Harvey & Consalvi, 1960; Back & Davies, 1965) or attributed competence (Back & Davies, 1965; Hochbaum, 1954).

Instrumental dependence can originate from effect dependency. The individual confirms to be accepted (the effect). The level of confirmation is dependent on the individuals need and the other person's ability to satisfy the needs of the individual for acceptance. The need for acceptance is attributed with a kind of personality problem or low self-confidence (Moscovici, 1976, p. 21). The "weaker" the personality, the greater is his conformity

(Moeller & Applezweig, 1957; Strickland & Crowne, 1962). Even the pure beliefs that they were accepted led to higher levels of conformity by the individuals (Dittes, 1959). The role of anxiety was attested in many studies (Meunier and Rule, 1967; Smith & Richards, 1967; Milmann, 1968). But the mechanism regulating the need for acceptance is not clearly understood (Moscovici, 1976, p. 21). Another instrumental dependency is the informational dependence. Whenever there is uncertainty in the individual, it feels the need to be in line with the group. This was shown due to the certainty in the perception of one's senses, uncertainty about own judgments and a lack of confidence in the own abilities or intelligence (Hochbaum, 1954; Di Vesta, 1959; Rosenberg, 1963; Allen & Levine, 1968). Conformers were found to have low intelligence rankings (Vaughan, 1960). And non-conformers tend to show the opposite characteristics like a feeling of high competence, power, or status (Hollander, 1967, p. 558).

But a “relationship between personality traits and conformity is far from being established”, if it was, then “it would be sufficient to know the basic personality types, [...] in order to be able to predict events” and “differential psychology would [...] replace social psychology” (Moscovici, 1976, p. 23). As the study of “needs” and the corresponding basic personality types would therefore lead nowhere in social psychology (and may even lead to its extinction), Serge Moscovici treats them as symptoms. Symptoms that come along in the justification process for the exerted pressure on deviants, meaning because there is a need to conform by the individual the exerted pressure will bring them to conformity and thus fulfill their needs. A kind of constructed and twisted justification, which was found out to be untrue in observations of exploited groups. The victims are looked down at, because they are the victims of the ill treatment, not because of their character traits they would “ask” for it (Bramel, 1972, p. 220).

Jean Marie Seca explains how progressive global, national, or regional developments are regulated and filtered, with the aim to control the deviant energy, originating from minority groups. He offers “some key concepts explaining the normalization of emerging [...] cultures” (Seca, 2013, p. 104). In France, the history of revolts is a reason for the way the majority is dealing with deviants, as the majority fears their beliefs, status and even their

physical integrity in danger¹⁰⁸. Therefore, the majority (of social power) creates institutions, legal regulations, and structures with the aim to monitor, detect and influence the deviant minority groups. They are regulated in “scientific, economic, financial, social, professional, psychological (and) sociological” terms¹⁰⁹.

The early days of sociology focused on the research of conformity and dependency (Festinger, 1950; Moscovici 1983, p. 43). The power of the majority, comes to light in high social status, resources, and a positive social image, is used for the social control of deviants, who are mostly viewed as some negative influence. A person that wants to lead the group must build up social credits by showing utmost conformity with the majority groups values. If a big social credit status is achieved leadership for social control or social change can be exercised. “What one member of a group may do with impunity another may not do” describes the central element of the “idiosyncrasy credit” model of perceived status and conformity (Hollander, 1961, p. 247; Hollander, 1958). Social change is foremost explained from a top-down approach as the majority is the group with the social power to deny or propagate social change, while the deviants (or minorities) are powerless (Hollander, 1960).

In regard to meditation this concept might explain some aspects of the differences in the social representations of meditation in the East and West. The Western world view is largely influenced by the belief in science and its distinction from philosophy and religion / spirituality. Therefore, conformist tendencies lead to a skeptical attitude towards spiritual

¹⁰⁸ The experience of 1968 revolts in France seen in the light and connected with the mobilization power through the emotional experience of emerging music for and by the young generation, led to the “desire to culturally counter, transform, and even sublimate the deviances” (Seca, 2013, p. 116 & Lafargue de Grangeneuve, 2008).

¹⁰⁹ Through a network of national associations, networks, conference, and festivals, etc. the emerging innovative and therefore challenging forces are lured with their own desire for recognition, expressed in terms of (commercial) success. Groups closer to the majority’s opinion can be aided through the grant of rehearsal rooms, production studios, big public performance opportunities and airplays through radio quota for francophone songs. More extreme deviant groups can be demoralized or hold marginal through the denial of these opportunities. Also, there is the hope that the deviants can be corrupted, and their radical deviance can be softened by this. The effect is that “previously dissident styles [...] end up acquiring [...] to a certain degree a canonical status”, but with a neutralization of the majority challenging, connotations (Seca, 2013, p. 118; Coulangeon, 2010; Lescop, 2012).

methods in large parts of society. Before a willingness arises to examine the explanatory models of the meditation method examined, strict scientific testing is required, signs of indoctrination and manipulation are searched for, and many other explanatory models are used that could also explain the effects shown.

The Eastern world view is largely influenced by the spiritual belief. Therefore, conformist tendencies could lead to a non-skeptical attitude towards spiritual methods in large parts of society. Therefore, it could be that meditation methods are less critically examined than necessary and no scientific testing is asked for, signs of indoctrination and manipulation are overseen or neglected, and no other explanatory models are considered. But Indians also know false gurus who are out to get money, who try to manipulate and exploit people. This in turn leads to a skeptical attitude towards different practices in India as well, with the same result as outlined before above for the West.

1.2.2 Bottom-Up Approach of Social Change - Minority Influence Theory

In his book Moscovici (1976) developed the “genetic model”. In this model, social systems and the environment are looked as changeable. Individuals interact with the group with the aim to grow personally and there is an interdependence between the group and the individual (or between the society and small groups of the society) (Moscovici, 1976, p. 1). Society exists to complement nature, therefore, there is no need of the individual to oppose to society and societal influence is inevitable (*ibid*, p. 37). While “some things seem to be so amazing to us that we are tempted to believe ... that they work only by the intervention of supernatural powers.” (Moscovici, 1976, p. 1).

Many social changes are introduced from the bottom. Serge Moscovici sees “active minorities” to be the driving force in this bottom-up processes and believes them to be the force behind the most changes, “if not the only factor of innovation”. He examines mostly “more important” change processes that do not play in the field of norm deviation, but in the field of proposing another norm (Moscovici, 1983, p.43). While the traditional conformity-oriented approach talks of “deviants” that violate social norms, Moscovici gives

more positive connotations (as he focusses on other examples), he sees “the appearance of a new line of thought, of a pioneering heterodox subgroup or a group” acting towards social change (*ibid*).

Moscovici observes active minorities that “seek to convert other people”¹¹⁰ (Moscovici, 1983). They “have a special position, transgress certain beliefs or reject certain behaviors, have their own identity and conception (Moscovici, 1983, p. 43). It is the “behavioral style” that explains the power for social influence, not the social status of a subgroup or group. The behavioral style can be “their way of expressing their point of view or of organizing their responses” (Moscovici, 1983, p. 44).

Sometimes the minority influence theory and the idiosyncrasy credit theory (described in the previous subchapter) are seen as conflicting¹¹¹. But as Peter Kelvin postulates “there are indeed two models, they are not competitive, but complementary.” (Kelvin, 1976, p. 441). “Consequently, once we rid ourselves of the dichotomy which would make the ‘functionalist’ and ‘genetic’ models incompatible, we have in these sets of propositions the fundamentals for a systematic theory of social influence-whether for conformity or for change.” (*ibid*, p. 446).

¹¹⁰ Another difference of the two theories, as the “deviant” of the traditional theory seeks for integration in the majority group.

¹¹¹ But the findings of an experimental study (Lortie-Lussier, 1987) could not find clear evidence for the dominance of neither of the two theories. “Two variables were manipulated: Status of the innovator (minority versus elected leader) and Ideological criterion for innovation (avant-garde versus reformist). It was predicted that the consistent behavioral style of the minority would make him more influential under the avant-garde condition than under the reformist condition whereas the idiosyncrasy credit of the leader would make him more influential under the reformist condition. Although the adoption hypotheses failed to be supported,” the author indicated that Hollander’s theory of idiosyncrasy credit could be complementary to Moscovici’s theory of minority influence (Lortie-Lussier, 1987, p. 431).

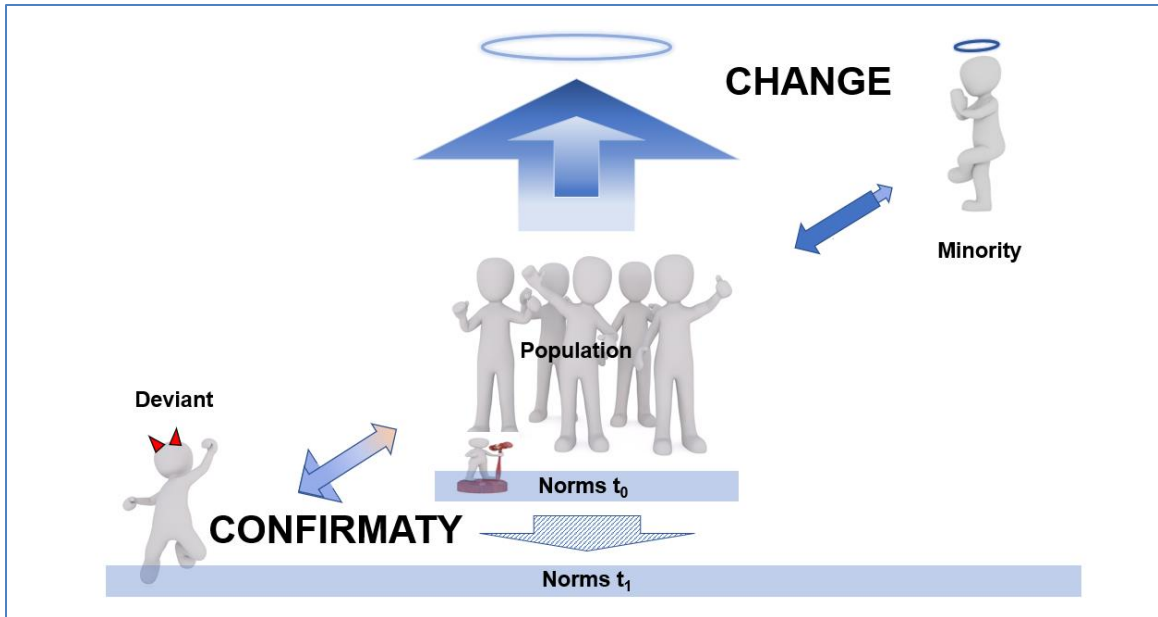


Figure 12: systematic theory for social-change; own approach, combining the influence of deviants and minorities on societal norms

These ideas led the researcher to the understanding of social-change shown in Figure 12. Depending on whether a deviation from the norm is assessed as positive or negative and depending on the persistence of the deviants to hold on to their behavior, deviants and minorities influence the population, which leads to smaller or larger changes in social norms in one way or the other direction.

Small groups, minorities with less social power, who act differently from the norm on the social stage, can influence the social norm if their ideas or methods are seen as useful by other parts of society and the norm changes accordingly. The adjustment of the norm to a positively assessed deviation, can be the greater, the more steadfast the minority is in exercising their ideals.

In contrast, smaller groups or individuals who differ negatively in their ideas or actions from the norm population are referred to as deviants. Without the transformative power of a good idea or behavior, they have less of an impact on society. In many cases, these deviants will even try to conform to the main norms of society. These negatively deviant behaviors will therefore be partly ironed out by society. Although they always have a

corrosive and disintegrating transformative effect, albeit a smaller one. For example, “immoral” behavior by a small group can “undermine” the moral standards of a larger group.

Meditation is considered positive behavior in the Indian sociocultural context, but is largely not practiced. When a small group begins meditation and this behavior is viewed as positive, it could lead others to begin the same behavior, which could be viewed as a possible starting point of a mass attraction phenomenon. However, an expansion of meditation activity to larger parts of the population will only take place if the larger group knows about the meditation activity and is attracted to this activity. But it can also be possible that the meditation technique fosters the development and expression of certain skills, that are recognized as positive. Then an adaptation will take place in regard to this new behavior norm (positive role model function) and not to the triggering meditation technique. This may be because either the connection of the new behavior is completely unknown or assessed as unimportant. Also, it might be possible, that the outcome behavior is considered more positive and imitable than the supposedly higher effort of meditation.

1.2.3 Social Cycles and World-System Theory

Social Interactions are a central element of sociology. Pitrim Sorokin¹¹² defined social interactions as “any event by which one party tangibly influences the overt actions or the state of mind of the other” (Sorokin, 1928, in Wagner 1964, p. 578). It will be observed in this research, if the intervention with the meditation practice will affect the state of mind of the individual and that of others.

Sorokin developed the Social Cycle Theory (SCT). He regarded the process of development and evolution of societies to develop in cycles that are repeating. Progress

¹¹² Sorokin was the 55th president of the American Sociological Association (ASA). He was researching Altruism and Social Changes.

of societies is imparted in many forms of the Social Cycle Theories¹¹³ and one could rather speak of a “spiral evolutionary development process”, where social progress is seen by the reoccurrence of societal and social phenomena (that are characteristic of societies) but on a higher level.

The idea of repeating cycles, from Golden Ages to Dark Ages to Golden Ages again, was a common belief in ancient cultures (Rossides, 1998, p. 69).

Immanuel Maurice Wallerstein¹¹⁴ took up the concept that every system has a lifecycle in his World-System Theory (Wallenstein, 1974, 1980, 1989, 2011).

Wallenstein, sees the world today as a system that has grown in this form from the 16th century, characterized by independent political units (states) the division of labor and a network of economic exchange relationships. This World-System (or capitalist world economy) inherits now many conflicts, caused by the differences between work and capital (Marx), the endless accumulation of capital and even more dominantly by the conflict between the core and the periphery. According to Wallenstein, at the core are the developed countries that are highly productive and accumulating the added value, that was generated in the periphery. In the periphery are the developing countries that exploit resources or produce primary goods on and by a relatively low technical standard. These countries are weak, they are challenged from inside and outside, from countries of the core or competing countries that also want to trade with the core-countries. The conflicts within the systems grow as the systems growth reaches its borders of expansion. The borders are amongst others of geographical, demographical, and ecological nature.

The system theories are to be considered and valued for their dialectical analysis of the social system that sets the norms and institutions for the social actors¹¹⁵. Wallenstein

¹¹³ The Social Cycle Theories differ in a way to Socio-cultural Evolution Theories that tend to see a more linear process of development of the social progress.

¹¹⁴ Wallerstein was an American sociologist and economic historian. He is perhaps best known for his development of the general approach in sociology which led to the emergence of his world-systems approach.

¹¹⁵ The system theories constitutive on Marx are not to be confused or connected with the communist performance of these ideas, or with the political actors who claim and claimed to follow

describes a dynamic system which has tendencies to the maintenance of the status quo or even to widen the economic gaps between the core and the rest (Onyishi & Amoke, 2016, p. 5). Critics consider the theory of Wallerstein as too global and not adapted to the context of digitalization. In addition, it doesn't take cultural variables in account.

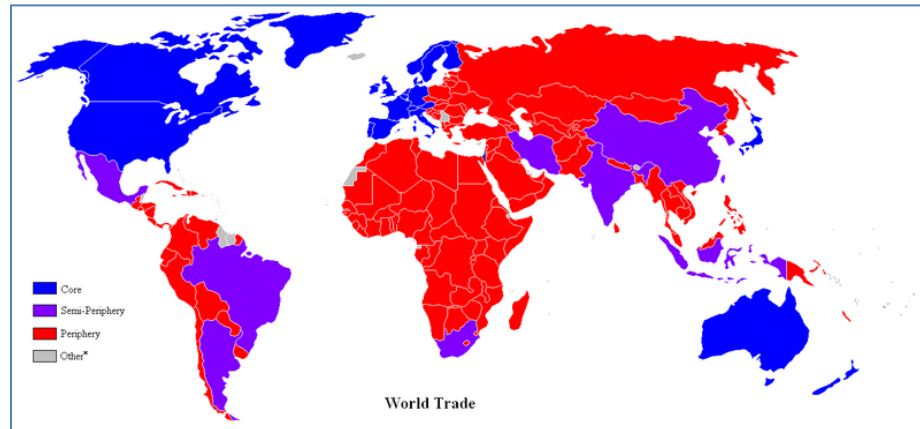


Figure 13: World map of countries by trading status, late 20th century, using the World System differentiation into core, semi-periphery and periphery countries¹¹⁶

The figure 13 shows a world map displaying the categories of the World-System Theory. The color of the national territories classifies the countries as belonging to the core (blue) or to the periphery (red). India was (twenty years ago) categorized as semi-periphery country (purple), that is situated somewhere between core and periphery, gaining added value from the exchange with periphery countries and supplying added value to the core countries¹¹⁷. India is generating value at the lower end of the value chains as a service provider (for example call-centers) and manual labor (e.g., textile industry) for countries classified according to the World Systems as core countries, but India (and China) aims for more.

According to Wallerstein every system has a life cycle, because they all have internal contradictions and if the systems move to far from the equilibrium state, they will oscillate

these ideas. Nevertheless, these Marx connected theories may be considered left winged. The categorization into a left- and right-winged nature of theories, politics or political beliefs finds its analogies in the theory of yoga – and therefore maybe helpful in the understanding of the yoga theory.

¹¹⁶ World map of countries is based on a list in Christopher Chase-Dunn, Yukio Kawano and Benjamin Brewer, Trade Globalization since 1795, American Sociological Review. (Chase-Dunn, *et.al.*, 2000).

¹¹⁷ The category “other” was giving to territories or countries with populations smaller than 1 million.

enormously and come to moments of bifurcation, where the system cannot survive, but in these chaotic circumstances it is not clear in which direction the system will change. The direction of the new system is completely unclear because the collective decision will be the result of an infinity of detailed decision makings, of an infinity of people and an infinity of moments (Wallerstein in Arpa keun, 2014).

Undoubtedly India is in a transitional state of a developing country, still belonging to the category of an underdeveloped country in some regards or areas (e.g., infrastructure) while at a fairly competitive level in other areas (e.g., IT, space-industry). India aims for further development and India aims to find its own ways to deal with the challenges of our time in order to develop further. One approach is to find more culturally appropriate ways of doing things¹¹⁸.

1.2.4 Gandhi's theory and practice of social change

Some sociologists assume that an investigation of a sociological problem only allows to analyze sociological constellations without providing solutions to the problem. While others understand the role of a sociologist in looking for solutions and ways out of the problem. “Knowledge cannot be detached completely from concerted corrective action” and the “depth of a society’s problems may require deeper structural and cultural changes” (Smrutisikha, n.d.).

Gandhi was neither a professor nor a trained sociologist, but his analysis of the social situation in India and of the general social contexts formed the basis for one of the greatest social changes in Indian society. “Gandhi did not construct a theory of social change in the sense that most social analysts do”, but “through the vast magnitude of his writings”, one can depict “his design for social reordering” (Mondal, n.d.). His compelling practical theory of social change inspired the American civil rights movement of Dr. Martin Luther

¹¹⁸ Another example of a country that is following its own path of development is China. Many predictions assume that China has the potential to overtake the US as a global superpower. The Chinese way may be related to and consistent with the Chinese sociocultural context, but it is different from the Indian ways, which are still sought. And as a major difference India is the world's largest democracy by population.

King and Nelson Mandela's fight against Apartheid in South Africa¹¹⁹ up to many civil rights movements of the recent past. Mahatma Gandhi believed youth and education to be an agent for social change (Adaikalaraja, 2010). Education was only supportive for society and a social change if it "gave primacy to character building over the acquisition of knowledge and occupational skills"¹²⁰.

On a first view Mohandas Karamchand Gandhi did fight for the independence of India. When looking closer at his speeches, his writings and reports about him, it becomes clear that his mission was a fight against the wrong and for the good, against injustice and for justice.

Gandhi's best-known agitations of non-co-operation are homespun cloth and the salt march¹²¹. Both addressing broader injustice on a micro level. The British were importing cotton from India, spinning their famous English cloth¹²² from it, exporting the suits back to India, selling them to the wealthy Indians, causing unemployment and poverty in Indian weaving mills. Gandhi asked the Indians in his peaceful resistance campaign to burn and refuse British cloths and start producing homespun clothes themselves. The salt march challenged the British monopole on salt production, as he asked Indians to produce salt from the Indian ocean and to sell and buy this salt. He did not only fight against British

¹¹⁹ South Africa was also the place of Gandhi's first encounter with an unfair system that gave him the epiphany moment of self-realization that he had to fight this injustice system, after being thrown out of a train because of racial discrimination.

¹²⁰ If education is not centered on character building, it can be used as a method of building followership, but only to some extent. One can remember Henry Peter Brougham words: "Education makes a people easy to lead, but difficult to drive, easy to govern, but impossible to enslave." Henry Peter Brougham, *Speech to the House of Commons (January 29, 1828). The Present State of Law, 1828*. From the series Great Ideas of Western Man. <https://americanart.si.edu/artwork/education-makes-people-easy-lead-difficult-drive-easy-govern-impossible-enslave-henry-peter>

¹²¹ Salt March (also known as Salt Satyagraha, or Dandi March) was an act of nonviolent civil disobedience in colonial India led by Mahatma Gandhi. The twenty-four-day march lasted from 12 March 1930 to 6 April 1930 as a direct-action campaign of tax resistance and nonviolent protest the British salt monopoly.

¹²² The traditional way of teaching international labor division and international trade, what can be considered to be the predecessor of globalization, is with David Ricardo's famous example of the exchange of Portuguese wine for English cloth (symbolizing the best these countries produce).

colonialism, that was exploiting a country, but also was fighting against injustice amongst the Indians. He was against the “slavery attitude” regarding the caste of the untouchables and women. “Gandhi believed that politics was a process which should aim at liberating the human values” (Acharya, 1997, p. 603).

A reason why he was such a big leader and Indians were following him to an extent never seen again, was that he lived what he talked. He spent hours a day spinning, he wore only traditional Indian cloths of the poor people, he rather walked than going by car. He let himself beat and imprison by the rulers, like he asked his followers to strictly act in non-violent resistance. He was a role model, a kind of an ideal person. That made people call him Mahatma (the “great soul”).

"To him, the dichotomy of the individual and society is false. Society is not something external to the individual, but a projection of his own identity or an extension of the self" (Mondal, n.d.b.). This was his idea of leading by example; an idea that connects to the philosophy of the unity of creation.

Gandhi's ideas, actions, and philosophy were deeply embedded in Indian philosophies¹²³. Gandhi saw the disposition in man¹²⁴. either to follow his lower needs¹²⁵ (e.g.; money, power) and to let brute forces reign his character (which result in brutal actions) or to strive for goodness and perfection. Which means searching for the higher self. That can open a path to true freedom and liberation.

¹²³ This is another, if not the biggest, reason why he is still valued in India as a visionary for his concepts of society.

¹²⁴ Gandhi “rejects both the Marxian view of man as an ensemble of social relations whose nature is governed by the objective conditions of his existence (the basic material structures of social life) and the liberal view of man as a free agent in a milieu” (Mondal, n.d.a), which understands social processes “as resulting mechanically and independently of the individual will from the action of countless autonomous individuals on each other and in response to each other, behaving as rationally as possible for the protection of their private interests and basing their actions on their knowledge of the market with no regard for any trans-individual authority or values” (Goldmann, 1973, p.18).

¹²⁵ In Gandhi's "scheme, the individual is potentially a morally autonomous entity, entrapped by his lower nature into subservience to the false imperatives and values of the phenomenal world, but capable of being aroused to his moral freedom to pursue the call of the higher self” (Mondal, n.d.b).

Mahatma Gandhi's ideas of passive political resistance were in line with the Indian tradition. He wanted to win over "hate with love". At its inner core Gandhi's mission was a social change through and in direction to the dharma (Sanskrit, meaning: the righteous path or way of conduct, or morality)¹²⁶.

Gandhi's principles of passive political resistance (satyagraha) for the freedom fight connect to the rules of Karma Yoga. The purpose of satyagrah is "1. It purifies the sufferer. 2. It intensifies favorable public opinion. 3. It makes a direct appeal to the soul of the oppressor" (Rajak, 2019, p. 210). So, following these rules the Indians did something in line with the divine rules, according to Indian belief system. "Gandhi based Satyagraha¹²⁷ on the Vedantic ideal of self-realization, ahimsa (nonviolence), vegetarianism, and universal love" (Rajak, 2019, p. 209). Self-realization is the most important one as it builds the foundation for the other three Vedantic ideals¹²⁸. Self-realization is another word for yoga that means connecting with the divine and realizing the self and its relationship to creation and divine principles. It can be achieved through meditation.

Gandhi gave his autobiography the title "The story of my experiments with truth". In the Introduction he writes "My experiments in the political field are now known. But I should certainly like to narrate my experiments in the spiritual field which are known only to myself, and from which I have derived such power as I possess for working in the political field"¹²⁹ (Gandhi, 1993, p. 1).

¹²⁶ The principles of sustainability in its core also require a new moral code of conduct, be it regarding ecology, be it in regard to equality.

¹²⁷ Satyagraha is a Sanskrit and Hindi word, means "holding onto truth". Satyagraha concept introduced in the early 20th century by Mahatma Gandhi to designate a determined but nonviolent resistance to evil.

¹²⁸ Vegetarianism is major Indian food concept, followed by many Indians, especially Brahmins. Gandhi himself was a vegetarian, first by tradition later by choice and the members of Sabarmati Ashram somehow had to follow his ideas of diet. But it did not play a major role in freedom fight context.

¹²⁹ Mahatma Gandhi in his introduction from Sabarmati Ashram on 26th November 1925.

Spirituality, prayer and meditation¹³⁰ gave Gandhi the powers he needed for his work that he dedicated his life too. He strove for self-realization and lived to his ideals¹³¹. This inspired and motivated other to follow him and his example. By this the Indian freedom movement became big and successful. Therefore, the individual quest for personal development that was fostered by meditation initiated not only an individual but also the social transformation¹³².

1.2.5 The learning organization approach to create positive conditions for Social Change – A Systems View

The seventeen Sustainable Development Goals (SDG) call for personal and systemically changes. Mainly the SDGs describe social problems, some of them are also related to ecological problems, but not all, and all SDGs mainly deal with the societal impact of the problems. Even if there will be no noticeable changes in the main areas of activity, there will still be social effects and changes coming on the agenda. For example the social gaps are increasing, if nothing is done to reverse this tendency, because of the further growing social divide within countries, there will be an uprising by extremist groups on the political left and right, which in the best case at least creates an uncomfortable atmosphere of anger and hatred, intolerance and egoism; Because of the social divide between countries, there will be larger scale attempts for immigration into the wealthy countries, which the better off nations perceive as a threat to their way of life. Overfishing is mainly

¹³⁰ Prayer and Meditation. "Prayer does for the purification of the mind, what the bucket and the broom do for the cleaning up of our physical surroundings. And that is why we always commence our proceedings with prayer. No matter whether the prayer we recite is the Hindu prayer or the Muslim or the Parsi, its function is essentially the same, namely, purification of the heart." (Gandhi at Mahatma Gandhi Memorial Foundation, Inc. retrieved at 11.09.21 <http://www.gandhimemorialcenter.org/prayer-and-meditation>)

¹³¹ To see the universal and all-pervading Spirit of Truth face to face one must be able to love the meanest of creation as oneself. And a man who aspires after that cannot afford to keep out of any field of life. That is why my devotion to Truth has drawn me into the field of politics and I can say without the slightest hesitation and yet in all humility, that those who say that religion has nothing to do with politics do not know what religion means" (Gandhi, 1993, p. 2).

¹³² "This quest begins independently of the social fabric, but the course of this movement towards self-realization reshapes his environment in accordance with the moral and spiritual concomitants of the higher self, which are built on disinterested altruism, or the imperative of submerging individual identity in the service of humanity" (Mondal, n.d.b).

a distribution problem caused by actors that are putting narrow egoistical financial interests higher than the legitimate interests of others to also get a share and to have this share also in the future. Overfishing of the oceans could lead to food supply problems and to social and financial problems for the fishermen who bring it into their societies, etc. Overall, there will be many social changes only the extent and directions are not precisely known today¹³³. Due to digitization, automation and general technical progress, not only is information spreads quickly, but also critical turning points can be reached quickly, e.g., in the overfishing of the seas. This means that social changes will also come much faster than it was the case in the last few centuries.

In order not to be overwhelmed by these changes, it would be good if they could be anticipated and the respective systems were ready to make multiple and complex changes in the system in order to turn the challenges into opportunities and promote positive change.

In the education system, for example, it would make sense to implement structures, routines and methods that helps schools as an institution to deal with coming social changes, like different student structure regarding their personal profile, class etc... On the other hand, to adapt the teaching style in such a way that it prepares the students for future challenges.

The American systems thinker Peter Senge has developed a learning organizational approach. Peter Senge *et al.*, (1994) constitute that it is possible to create learning schools (and other learning organizations and in general learning systems) through continuous

¹³³ Sustainability problem fields are everywhere; in politics and science and in so many different contexts and concepts, there are numerous definitions and measurement approaches. So much that, "the very holistic and anthropocentric essence of sustainability continues to elude attempts at objective analysis and assessment. Managers love to 'measure' in order to know that they have managed successfully; but so much of life is immeasurable." So do "we end up measuring things that can be measured and not things that should be measured, if possible. (...) Indeed, sustainability is not a 'thing' that can be measured, and an element of circularity appears inevitable: sustainability becomes defined by the parameters that can be measured rather than the other way around." (Bell & Morse, 2006, p. xvii). Which means it is not possible to know what points are critical, especially social problems are hard to measure and to calculate its impacts. Therefore, rises the problem that "sustainable development has, indeed, become a quintessential example of practical holism, but at the same time embodies an ultimate practicality since it is literally meaningless unless we can 'do' it" ((Bell & Morse, 2006, p. 5).

“practice of five “learning disciplines” for changing the way people think and act together”. The five “disciplines – systems thinking, personal mastery, working with mental models, building shared vision and team learning – provide a great deal of leverage for those who want to foster and build better organizations and communities” (Senge *et al.*, 2012, p. 6).

Relatively small and cheap measures can have a big impact, if they act as leverage by driving or triggering larger changes in larger areas, like a trim tab. A trim tab is a little steering device that changes with little efforts the direction of a plane or a big ship. Buckminster Fuller, its inventor, often used the trim tab as a metaphor, for the effect that small people, inventions or ideas can have on the society – with just a little change, they can change the whole direction of the society. For those who are not familiar with the system, the complete shown effect is even more impressive than for insiders, since outsiders do not fully understand the operating mechanisms of the system (steering device, school) anyway. Senge has found that systems with a high proportion of human factor, such as schools, are particularly suitable for such small, effective measures with leverage, since even small changes are sufficient to achieve a major impact in them. If difficult problems arise, it is therefore important to search for the levers. Often, they are not found until the mindset or perspective is changed. (Senge *et al.*, 2012, p. 6).

This research work will examine whether meditation can be the lever that triggers personal development on multiple levels in a school environment, as this is described in the meditation theory. In addition, it will measure the effects of meditation¹³⁴ on the environmental attitudes¹³⁵.

Summary and Conclusions regarding Social Change and Social Influence

The Sustainable Development Goals and efforts to keep climate change in certain limits (*e.g.*, Paris Agreement, 2015) are understood as different aspects of societal change that has to come to reach these goals. There are actions to be taken on national and international levels, but even more on a societal and on an individual level.

¹³⁴ Half a year daily 45-minute meditation course, except on Sundays.

¹³⁵ Climate action is one of the 17 SDGs.

There are certain ways social change can occur or be promoted. It can be decreed on a political level. This is the Top-Down-Approach of social change, wherein the political leaders set a framework of rules and legislations that are to be followed. In a way politics also sets the attention of the media on certain issues and by this politics can determine the public discussion. These discussions can have norm building effects which can lead to the acceptance and adoption of the social change direction by large part of the society.

Other types of social change come from the bottom of the society. Small Groups, minorities with less social power come up with a different way of seeing things and handling things. If their ideas or methods are regarded as beneficial and favorable by other parts of the society, these minority groups can influence the society to move into their direction.

Societies are not constant. They run through different changes. History shows that societies have got lifecycles like in modern economy products have lifecycles. Societies with a special feature (like a technology, economy, philosophy) come up and under good circumstances they grow. But this growth is not unlimited; societies or social ideas have a high-time or a peak of their expansion, power, or economy in which they show a systematic dominance. After the peak comes a period of decline. Like in the product lifecycle societies are not doomed to extinction when they are in a downwards movement, they can change and adopt and come into other phases again. Also, societies do not have a solitary existence. They have surrounding societies which act on and interact with them. This exchange can be between societies with an equal level or between societies of a different level of power, where one society is dominating the other. So, each society has their history and is embedded in a world-system of societies. Both are influential factors. India's high time was long ago in ancient. The once magnificent and rich society of the past had been occupied by two dominant societies, first by the Muslim Moghuls, then by the British Empire. Today India is a semi-peripheral country which supplies added value to the core countries (North America and Europe). In other terminology India today is a developing country, wanting to become a developed country and higher than the least developed countries.

The biggest change in the latest history of Indian Society came through Gandhi who took the lead in the freedom movement. His method of change was based on ideals that are deeply rooted in the Indian culture. The idea of non-violence and the belief that the just will at last prevail the unjust has its roots in Indian philosophy and religion. It is connected to karma yoga and dharma, the belief that all actions have consequences, the bad actions will lead to bad consequences and good actions will lead to good consequences and therefore a highly moral behavior is essential. Gandhi personified this ideal to an extent that was never seen before in politics. He is a role model still, a transcendent personality, that did not care about his personal comforts but sacrificed them for the common good of the society. He regarded youth and education as motors of social change.

The learning organizations approach identifies five key factors that are supportive for a positive change process. They are Personal Mastery, Shared Vision, Mental Models, Team Learning and Systems Thinking. In order to establish these five disciplines in an organization, people must have these qualities. The descriptions of traditional Indian meditation describe these factors as part of the meditation effects. The knowledge of the (deeper / inner) self, is the first step to self-mastery, egoless behavior and attitude is an essential team quality and the observation of the self from a bird's eye view can open the understanding of different systems involved in a process. It helps to understand the perspective of others involved and it inherits the understanding that integrating as many perspectives as possible, ideas or qualities fosters balanced systems that reach better results than one-sided approaches, systems, or organizations.

2 Meditation - Review of the related socio-historical and scientific literature on yoga and meditation (Analysis of the social genesis of the independent variable of the study)

2.1 History of Yoga and Meditation in the world other than India

To write on meditation and yoga in the field of sociology it is necessary to distinguish, whether we are dealing with meditation as a purely socio-cultural phenomenon, or if there exists a reality of meditation as a core phenomenon which provides the basis for the socio-cultural perceptions of this phenomenon and history shows the social intercourse and understanding of this phenomenon.

Johannes Bronkhorst¹³⁶ captured the consequences of this conflict of objectives:

“Is there, independently of the cultural context, such a thing as meditation, or meditational states? If we think there is, our study is going to take an altogether different shape than when we think there is not. If we think that there are no such things as meditation and meditational states, our textual sources are the beginning and the end of our enquiry. [...] If we do, however, accept that meditation is something quite independent of the way it is interpreted within different cultures, we will wish to know what it is” (Bronkhorst, 2014, p. 27-28).

Bronkhorst follows with examples of Jain and Buddhist “meditations”, that for various reasons are called meditation, but do not have anything in common with meditational states, as he says. While on the other hand practices that appear different on the surface may lead to similar effects. In addition, even non-meditative activities like surfing or going for a walk may have similar effects that occur with meditation experiences. The scientific

¹³⁶ Johannes Bronkhorst is a Dutch Orientalist and Indologist, specializing in Buddhist studies and early Buddhism. He is emeritus professor at the University of Lausanne.

study of meditation leads to aspects of the human mind that are not the sole domain of meditation (Bronkhorst, 2014, p. 39).

In the following literature research on meditation, we try to get to the core of meditation as a real phenomenon, the existence of which is the premise of this work. The basic phenomenon of meditation is the same for all people, since all people are basically constructed in the same way, the organs, the energy system, the mind, etc. are basically constructed in the same way. As in medicine, the basic functions of the heart, stomach or brain can be considered to be the same for everybody. There may be small differences in general body health, moods or state of mind. Therefore, personal experiences may vary, but the overall mechanism is basically the same. What will differ from person to person is the accessibility and ability to follow the methods, just as there are different dispositions and talents for learning a particular sport (e.g., football or table tennis).

But the socio-cultural perceptions of this phenomenon, the social representations of meditation, are historically and culturally different. Parts of this social context has already been discussed in the previous chapter. In this chapter here a further going attempt is made to find out what can be assigned to social phenomena and what corresponds to the real underlying phenomena. How far did different understanding of the real phenomenon lead to different streams and concepts of meditation? Are there differences in the effects of meditation practices? What distinguishes different meditation practices?

The roots of meditation and yoga and its socio-cultural perception are to be found in the past. As meditation is a cross-cultural phenomenon, it is chosen in this work not to follow chronological timelines rigidly but to try to build a flow of understanding and contextual sense, therefore the recurrent theme will be shaped not linear.

Differing from the personal understanding of meditation there might be many supposed forms of meditation in the West. But we try to focus on practices that are connected with meditation or that come close to the understanding of 'real' meditation as a state beyond thinking. About the actual practices of the early European cultures, like the celts and their spiritual leaders (the druids) very little is known. Schopen and Freeman see roots of Western meditation in the early Christian church. "The Desert Fathers, who were among

the earliest Christians, used to silently repeat the 'kyrie eleison' to help themselves achieve a state called 'quies', a state of 'now-hereness and no-mindness'" (Schopen & Freeman, 1999, p. 124). The authors give also other examples of early Christian and mediaeval Christian "meditation" practices. Several poets of the 17th, 18th and 19th century were strongly influenced by meditation and mystical practices, outstanding were William Blake and William Wordsworth¹³⁷. From the end of the 19th century Schopen et al. see a break of Western meditation and meditation influences that lasted till the 1950s/1960s as San Francisco Beatniks like Allen Ginsberg and Gary Snyder were introducing Zen concepts into the beat scene and Alan Watts "taught at San Francisco's School of Asian Studies and is considered by many to be the foremost spokesperson for Eastern meditation in America" (Schopen & Freeman, 1999, p. 125). This time can primarily be regarded as decisive for the social representation of meditation in America today. The flower power generation was searching for new experiences, many of these experiences were connected to drugs. Some were searching for spiritual enlightenment. Some went to India and some Indian "Guru's" came to America. Some created a cult about themselves, were indulged into money making or other inappropriate behavior for a Guru. Many of these false Guru's and their wrongdoings got exposed. Which led to a greater general skepticism towards yoga and meditation techniques. In the 1980s and 1990s there was a growing interest in methods of healthy living and body forming. "Part of the appeal of yoga as it was popularized in Western countries (Europe and the Americas in particular) has been a belief in yoga's practical, 'scientific' benefits in terms of health and 'well-being' together with yoga's association with an ancient (i.e., legitimate) spiritual tradition" (Newcombe, 2009, p. 988). After all, yoga exercises became popular at some point. Since the post-war cultures of America and Europe were and are closely linked on various levels, the American and European social representation are to a large extent similar.

The western social representation of yoga has led to many deep misconceptions about yoga and meditation. The "popular association of the word 'yoga' is now focused on the

¹³⁷ The interested reader can find more mystical poets listed in Meditation: The Forgotten Western Tradition from Schopen & Freeman, 1991.

semi-secular practice of ‘postures’ (asana)” (Newcombe, 2009, p. 986). Even those who feel very comfortable and established in their knowledge about hatha yoga find out about their misconceptions only after years. Like Mark Singleton, (PhD in divinity and yoga teacher and author of yoga books), who describes how he found after years that the postures he was teaching in his hatha yoga classes originated from 19th and early century Scandinavian and Danish gymnastics¹³⁸, when he discovered an old book with pictures of these postures. He further discovered that famous ‘yoga teachers’ like Tiruka (a.k.a. K. Raghavendra Rao), Manick Rao and Swami Kuvalayananda “blended asanas and indigenous Indian physical culture systems with the latest European techniques of gymnastics and naturopathy” (Singleton, 2011, p. 3) to strengthen the Indian bodies in their strive for the Independence of the British.

Depending on the involvement with this type of yoga (Hatha Yoga) it is either associated with the gymnastically secular activity or in a more far-reaching understanding which includes contemporary spirituality or relations to Indian religiosity. But even when Hatha Yoga is practiced in a secular way and environment, the spiritual aspects become the main motivation for long-term practitioners for doing so¹³⁹. This was even experienced in a prison environment, as Mar Grier and Anna Clot-Garrell found out (Grier & Clot-Garrell, 2015).

¹³⁸ “It seemed clear that the styles I practiced were a relatively modern tradition, with goals, methods, and motives different from those traditionally ascribed to asanas. One only has to peruse translations of texts like the Hatha Tattva Kaumudi, the Gheranda Samhita, or the Hatha Ratnavali, to see that much of the yoga that dominates America and Europe today has changed almost beyond recognition from the medieval practices. The philosophical and esoteric frameworks of premodern hatha yoga, and the status of asanas as “seats” for meditation and pranayama, have been sidelined in favor of systems that foreground gymnastic movement, health and fitness, and the spiritual concerns of the modern West” (Singleton, 2011, p. 4)

¹³⁹ A “typology that Henrichsen-Schrembs developed aims to describe and categorize the motivations of yoga practitioners. In a qualitative study of yoga in Germany, the author found that yoga practitioners could be divided into four different types. These types are the Pragmatist, the Explorer, the Self-Helper, and the Mystic. They are structured according to participants’ spiritual involvement in yoga: less involved people use yoga as a means for relaxation whereas a high involvement implies that people choose yoga as part of a lifestyle and worldview” (Henrichsen-Schrembs. & Versteeg, 2011, p. 2)

Vivekananda¹⁴⁰, one of the first teachers of Hindu yoga and meditation in the West rejected hatha yoga and asanas.

A good summary of the Indian social representation and the difference to the western social representation as hatha yoga is given in the Journal of AYUSH¹⁴¹.

Semwal *et al.*, states that “Usually, yoga is used in the form of asana, pranayama or short periods of meditation for therapeutic purposes. Moreover, general perception about yoga is also the same, which is not correct. Yoga in fact means union of individual consciousness with the supreme consciousness. It involves eight rungs or limbs of yoga, which include yama, niyama, asana, pranayama, pratyahara, dharana, dhyana, and samadhi. Intense practice of these leads to self-realization, which is the primary goal of yoga. An analytical look at the rungs and the goal of yoga shows that it is a holistic way of life leading to a state of complete physical, social, mental, and spiritual well-being and harmony with nature.” (Semwal *et al.*, 2016, p.17).

The western conceptions of yoga and yogis differed from what was appropriate from an Indian point of view from early on. The social history of yoga in the “modern period was also characterized by European trade with India and eventually the direct rule of most of India by the British. The educated classes of India re-examined their religious traditions in response to the new trade and power relationships. In the British colonial imagination, yogis (practitioners of yoga) were first associated with ‘immoral’ tantrics¹⁴², ‘thuggee’ gangs¹⁴³ and militant wandering ascetics” (Newcombe, 2009, p. 988). Europeans were fascinated by the obscure and strange, like tantrics, nail beds and strange looking individuals. In the eyes of the Indians and in their traditional understanding these people had little to do with yoga and Indians felt ashamed that their culture was represented by these strange individuals (Singleton 2008a, forthcoming).

¹⁴⁰ Vivekananda became famous in the West as the first Hindu to speak before the World Parliament of Religions in 1893. Later he gave many public lectures in which he contributed a lot to the understanding of Hindu spirituality in the West and also helped shape it.

¹⁴¹ AYUSH (Ayurveda, Yoga, Unani, Siddha and Homeopathy) is a department of the Ministry of Health and Family Welfare, Government of India.

¹⁴² Tantra means the mechanism or the technique - in particular it is connected to the use of mantras, meditation, yoga, and rituals. Immoral refers to sex practices used by some of the tantrics.

¹⁴³ Thuggee is an English word with Sanskrit references. Means "cheat", but is also the name of a historical gang of murderers and muggers who used religious camouflage.

Despite the widespread association of yoga and meditation with India, the Indian understanding of yoga and meditation made little impact on the social representation of the West. Therefore, the types of meditation that are widespread in the west are also very different from what is called meditation in India. The dominating types of meditation today in the West, somehow derived from two streams, the Buddhist-Zen-type and the Hindu-type of meditation (Smith, 1986, p. 11). Regarding the reports of positive and negative effects or considered placebo effects of today's meditation practices it is highly advisable to name the practices and to look upon from which roots they come and how they stick or derivate from that traditional way of meditation. The so-called Hindu meditations can be considered to date back earlier than Buddhist forms of meditation^{144 145}.” The origins of meditation and yoga can be traced back almost 3000 years. Until recently very little was known of these practices in the West, and what was known was frequently misunderstood and dismissed” (Walsh, 1989, p. 548). This research will concentrate on the origins of the Hindu meditation style, while Buddhist meditation style is grazed only, mostly regarding the popular Mindfulness meditation. Both Buddhist and Hindu Meditation have its roots in ancient Indian teachings and philosophy. India has different ancient schools of thought; all of them accepted the importance of meditation. As the origin of meditation two traditions are widely accepted. One is coming from the Bhagavad Gita, the other derives from Patanjali.

As stated earlier, the social representation of yoga and meditation has a lot to do with health and wellbeing issues. Before going deeper into meditation literature, we take a short look at these aspects.

¹⁴⁴ Siddhartha Gautama Buddha is believed to have lived in India between 500 – 400 BC. Despite the lifetime of Patanjali is dated back to the 2nd century BC or 4th century AC, Patanjali is generally known as the “father of yoga”. The Baghavad Gita is dated to have been written down probably in the 2nd century BC. The exact date as well as the authorship of these ancient texts remain unknown. What seems to be undenied is that there was a long oral tradition before the actual written form. The texts are written in sutras, means in a rhyme form that makes them easier to remember. Also, there is the uncertainty about Patanjali, as there may have existed two persons known as Patanjali, while the later one has written down the sutras of the earlier.

¹⁴⁵ “Although Hinduism is the historical progenitor of most of the meditative disciplines, it is Buddhism-its more youthful offspring, that has been the direct inspiration for many of the applications of meditative components to modern psychotherapy” (Carpenter, 1977, p. 395).

2.1.1 Health, Well-being and Meditation

The Constitution of the World Health Organization defines “*health*” as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 2014, p.1). The WHO constitution continues: “The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest co-operation of individuals and States” (*ibid*).

There is a growing awareness of the relationship between mental and physical health. And private health insurance companies have severe restrictions on their approval questions if psychological pretreatment has taken place, as they fear uncontrollable costs¹⁴⁶ due to a higher risk potential if there are previous mental illnesses. The health system has a strong focus on disease treatment, while there is a growing awareness that proactive disease prevention would be better and more cost-effective. Hatha yoga is considered good for physical health and is promoted by many health systems. Meditation techniques are believed to have benefits in mental relaxation. In some countries, e.g., the UK, the national health care system also pays for meditation courses.

The interest in meditation techniques is not only growing amongst health institutions and the general population but also within the scientific community. A large variety of meditation practices have emerged. The techniques researched are very heterogeneous combinations of meditation and yoga practices (in the sense of physical exercises)¹⁴⁷. The scientific reports on meditation include references to all parts of the WHO definition of health. Meditation research also covers many other aspects that go beyond general health and well-being.

¹⁴⁶ “The personal, social and economic costs of poor mental health, much of which fall outside the health-care sector, have been well documented. In the European Economic Area alone, the costs of depression and anxiety disorders have been estimated at €136.3 billion (2007 prices). Most of these costs, €99.3 billion per annum, are due to productivity losses from employment (Andlin-Sobocki *et al.*, 2005). Behavioral problems that arise in childhood and remain significant in adult life can increase costs not only to the health system, but also to criminal justice and social services, with reduced levels of employment and lower salaries when employed and having adverse impacts on personal relationships (Scott *et al.*, 2001; Fergusson *et al.*, 2005; Smith & Smith, 2010). Poor mental health is the leading or second most reason for early retirement or withdrawal from the workforce on health grounds” (Mcdaid, 2011, p. 108).

¹⁴⁷ In the present study the academic focus will be on meditation techniques.

These correspond to a wider fetched understanding of well-being. Well-Being actually covers many facets of life. According to Bill Hettler wellness has six major dimensions: physical, emotional, mental, social, occupational, and spiritual¹⁴⁸ (Hettler, 1979). Meditation research covers also aspects of these definition of well-being, even creativity, work efficiency, and sustainability.

In a larger social scope, the fulfillment of all Sustainable Development Goals (SDG) would also lead to individual well-being. In a way the SDGs can be summarized as a global well-being with a long-term perspective. To find global solutions for the SDGs the general cooperativeness and self-transcendence must improve. Cloninger (2006) found a positive correlation between persons of that character traits and their well-being, they experienced more frequently positive emotions (Cloninger 2006 in Puta 2015). Indeed, there are many indicators that personal and collective well-being are interlinked.

Models of well-being can be divided into hedonic and eudaemonic models. The hedonic wellbeing models focus on personal, subjective wellbeing (Diener & Lucas, 1999). This type of wellbeing can be viewed as short-term oriented and is insufficient at a global level to meet the SDG challenges. Eudaimonic means "good spirit", the term derived from Aristotle. According to him the highest goal for a person was to realize one's potential and to become a "flourishing human" (Irwin, 1999, p. xv).

In the newer psychology this idea of a flourishing human was taken up by the Humanistic Psychology. Abraham Maslow's work focused on the characteristics of individuals that realize and actualize their own full potential and the ones that even go beyond and put their live into service for the good of the society. Both groups show a higher-than-average level of well-being. Mihaly Csikszentmihalyi described how people can find satisfaction in what they are doing and perform at an optimum level in "the flow"-state.

¹⁴⁸ Myers defines spirituality as "a continuing search for meaning and purpose in life; an appreciation for the depth of life, the expanse of the universe, and natural forces which operate; a personal belief system" (Myers, 1990, p. 11). These sense of spirituality matches with the higher needs of a personality that wants to life to its potential, self-actualizers, how Abraham Maslow called them.

2.1.2 Self-Actualized and Self-Transcendent Personalities (Abraham Maslow)

“Abraham Maslow started in psychology the "third force", the Humanistic Psychology, by examining what is really right with people and focused on psychological health by studying positive human qualities and the lives of exemplary people” (Gundumogula, 2018, p. 247).

Maslow¹⁴⁹ is most known for the hierarchy of human needs (Maslow, 1964). In his motivation theory he considered two basic driving forces: deficiency needs and growth needs. “Those [individual] with deficiency motivation are more motivated by their lack of satisfaction and are defensive in reaction to threats to their basic needs. In contrast, those who are motivated by growth are driven more by exploration, creativity, and love for all of humankind” (Kaufmann, 2018, p. 3). The concept is often visualized in a pyramid, although this was never done by Maslow, but comes from the application of a marketing company. The popular marketing interpretation of Maslow led to a “gross misinterpretation of Maslow’s theory, as well as the spirit of Maslow’s overall body of work” (Kaufmann, 2020, p. xxvi), Scott Barry Kaufmann¹⁵⁰ classifies these even as a “parody” of the original ideas on self-actualization (Kaufmann, 2020, p. xxix).

Maslow described deficiency motives as the needs of an individual for physiological safety, love, and belongings as well as for esteem (confidence, respect). They are also called “lower needs” (and are generally considered to be the opening keys for advertisement messages). He also found an imbibed human need for growth; he classified that bundle of needs as “higher needs”. They show the urge of a person to become a higher personality and to find purpose in their life. These are the attributes of an ideal person,

¹⁴⁹ Maslow was ranked as the 10th most cited psychologists (Haggblom *et al.*, 2002).

¹⁵⁰ Scott Barry Kaufman, an American human psychologist, published the book "Transcend: The New Science of Self-Actualization" in 2020, in which he updates Maslow's theory and brings it into our time. He connects them with current, well-researched theories and approaches, underpins Maslow with current research data and clears up some misunderstandings that arose from popular scientific marketing research. Kaufmann is "an experienced researcher and scholar who teaches at Columbia University, NYU, and the University of Pennsylvania, and has published numerous papers on creativity, intelligence, and human potential" (Janiszewska-Szczepanik, 2020, p. 205).

such as morality, creativity, spontaneity, problem solving, lack of prejudice, and acceptance of facts. “According to Maslow (1971), self-exploration is finding out who one is, what one likes and dislikes, what one considers good and bad for self, where one is going, and what one's mission is – in short, getting in touch with one's inner self. This is perhaps the individual's first exposure to his or her own psychopathology and, paradoxically, perhaps the commencement of a spiritual perspective. It means identifying defenses, scrutinizing those defenses, and then finding the courage to let go of that familiar and pseudo protective lifeline” (Benjamin, 1998, p. 96-97). The same is done in meditation.

Another similarity to some of the most intense meditation experiences is what Maslow called “peak experiences”. These are extraordinary experiences, of profound moments of love, understanding or happiness. They are accompanied by euphoric mental states in which a person feels more whole, alive, self-sufficient, more aware of truth, justice, harmony, goodness, and so on. They invoke a feeling that “life is worthwhile” or “life is meaningful” (Maslow, 1964, p. 62-63). All people have peak experiences, but some deny, repress or suppress them. “We feel this can happen out of fear – fear of being overwhelmed by emotion, of losing control, of being insane, or weak, of being feminine or being childish, or being irrational” (Maslow, in Walborn, 2014, p. 267). If these experiences are regularly not recognized or not appreciated, they can disappear. “People who are completely rational or ‘materialistic’ tend to become ‘non-peakers’” (Maslow 1964, p.22). They may even be proud of their rationality, but they don't recognize that they are cutting off their emotional and joyful side of their character. Self-actualizing people are more likely to have peak experiences.

Maslow described the stage at which an individual reaches his full potential of being as self-actualization. “According to Maslow, self-actualized individuals are those who have satisfied their basic needs to a reasonable enough degree that they are not driven by the intense need to fulfill the deprivation of their basic needs, and they are therefore freed up to focus on health, growth, wholeness, integration, and the ‘real problems of life’” (Kaufmann, 2018, p. 3). Maslow's hierarchy is not a strict, gradual acquisition of properties, nor is it static; the stages can be reached once, but can also be lost again. And

actualization is not an all or nothing process, but can also be partially realized, e.g., an individual who has certain qualities, such as creativity or humor, may not have others and may not be fully self-actualized. Maslow assumed that self-actualizers are very rare. Modern researchers such as Scott Barry Kaufmann found in tests a rather normal distribution of the attributes of self-actualization (Kaufmann, 2018), but not for the full scope of self-actualization.

In his later years Maslow found an even higher category of people. In his works he focused then on strong personalities, who are trying to make the world a better place. These observations made Maslow add a higher category to his model. He used the term “Transcendence” to describe persons, who dedicate their own lives in service for others. These individuals are convinced that there are higher goals, which need to be pursued to such an extent, that they put their own individual needs aside (Gundumogula, 2018, p. 247). Transcenders are described to have "a holistic perspective of the world, a natural tendency towards synergy (cooperative action), (being) intra psychic, interpersonal, intercultural and international, (being) more consciously and deliberately meta motivated" (Chandler, Holden, & Kolander, 1992, p. 168). These “Transcenders” are few and rare personalities¹⁵¹, but they are important for society to overcome structural problems and injustices. They have the ability to change the course of society in a “right” direction. Abraham Maslow found overlapping characteristics in the way of life, the perception and the actions of such Transcenders. Furthermore, he also considered ways and methods for individuals to develop such higher personality (Maslow 1964, p. 21).

Despite the age of Maslow’s theory, “this framework for human motivation is strikingly supported by modern-day theory and research on personality and well-being” (Kaufmann, 2018, p. 3) and it is supported by current empirical data (Kaufmann, 2018, p. 3). The deficiency and the growth needs correspond to the meta trait’s “stability” and “plasticity” of the “Big five” personality traits (Kaufmann, 2018, p. 3-4)¹⁵². In addition, they correspond

¹⁵¹ For example, personalities like of George Washington, Abraham Lincoln, Mahatma Gandhi.

¹⁵² “The most prominent personality traits investigated in contemporary personality psychology are the “Big Five”—Extraversion, Neuroticism, Agreeableness, Conscientiousness, and Openness to Experience—which have been shown to account for most of the covariance among more specific personality traits (John, Naumann, & Soto, 2008; McCrae & Costa, 2008). While these Big Five traits have been studied intensively since the 90s, more recently, personality psychologists have

to the two main forces described in the theory of meditation, known as the lunar- and the sun channel¹⁵³, which can be explained as acting as brakes and accelerators for human endeavors. Self-actualization and self-transcendence are the corresponding concepts to enlightenment. Meditation is described to foster the positive qualities and character traits similar to those described by Maslow for self-actualizers and self-transcenders.

Maslow's peak-experiences somehow correspond to a state that Mihaly Csikszentmihalyi called "the flow" or "the zone".

2.1.3 Flow and Happiness (Mihaly Csikszentmihalyi)

Mihaly Csikszentmihalyi explored a state of total immersion in an activity, in which neither time nor effort are perceived, and the practice of the activity itself becomes a source of great joy and satisfaction. Top athletes like Ayrton Senna or Pele were able to achieve extraordinary abilities in this state, which amazed even their best opponents. Even normally talented people can come into this mental state of optimal experience, which Csikszentmihalyi¹⁵⁴ in 1975 named "Flow". For example, professional musicians or computer programmers but also chess players or mountain climbers can experience a mental state which leads to an intrinsic joy and motivation. In this flow-state of an activity, time and even space plays no role for the doer and action and consciousness merge. "During the flow activity there is no need for a self, no contracts and rules need to be

emphasized that they form part of a larger hierarchy. At the highest level of the hierarchy, there exist two "metatraits," which have been labeled by some researchers as "Stability" and "Plasticity" (DeYoung, 2006; DeYoung, Peterson, & Higgins, 2002; Digman, 1997). Stability is hypothesized to be primarily driven by the neurotransmitter serotonin, whereas Plasticity is hypothesized to be primarily driven by the neurotransmitter dopamine (DeYoung, 2006; DeYoung, 2013). This appears to be the highest level of the personality hierarchy; there does not appear to be a "general factor of personality" above them (Revelle & Wilt, 2013). The two metatraits of personality—Stability and Plasticity—are strikingly similar to Maslow's (1962/1998) distinction between deficiency needs and growth needs, and can be tied to what is required for optimal cybernetic functioning (Carver & Scheier, 1998; DeYoung, 2015; DeYoung & Weisberg, 2018; Wiener, 1961)" (Kaufmann, 2018, p. 3-4).

¹⁵³ Ida- and Pingala-Nadi.

¹⁵⁴ Csikszentmihalyi is one of the leading scientists in this field. He taught business management at Claremont Graduate University in California. Others before him were for example Kurt Hahn, Maria Montessori and Abraham Maslow.

negotiated. One becomes selflessness, self-forgotten, egoless” (Csikszentmihalyi, 1999, p.67). These states are experienced as joyful and meaningful for a person. At the same time, there is a learning process and personal development of skills.

However, the flow states described by Csikszentmihalyi can only be caused to a limited extent consciously. When high challenge levels meet high skill levels, they are more likely to happen. The inner attitude, open-mindedness and frame of mind etc. play a further role in achieving the flow state and in most flow activities the inner processes become more conscious. “People who learn to control inner experience will be able to determine the quality of their lives” (Csikszentmihalyi, 2009, p. 2).

In fact, the descriptions of the flow state and the state of consciousness during meditation are similar described in traditional yoga texts, where this type of experience is called sahaja (Manocha, 2017, p. 229). Csikszentmihalyi himself draws the connection of the flow state, which corresponds to an intense experience of the moment, with yoga and meditation techniques (Csikszentmihalyi, 1999, p. 67). He considered yoga to be “one of the oldest and most systematic methods of producing the flow experience,” (Csikszentmihalyi, 1991, p. 103) as it fosters the reach of flow-states in other activities (Csikszentmihalyi, 1988, p. 31).

Formula 1 pilot Ayrton Senna practiced a meditation technique in which he achieved a thoughtless state of mind¹⁵⁵. The mental strength that he drew from meditation gave him a decisive advantage over other drivers who at the time did not attach much importance to mental training. For example, in the qualifying at the Monte Carlo Grand Prix 1988 he outclassed his teammate Alain Prost, who had a similar car, and all his opponents – he pushed his car and his state of mind into new levels of capability. "That day, I suddenly realized that I was no longer driving conscious, and I was in a different dimension for me. The circuit for me was a tunnel. Which I was just going, going, going. And I realized: I was well beyond my conscious understanding" (Senna¹⁵⁶). An Australian Tour de France elite

¹⁵⁵ Dolphin media (2004) Documentary: Ayrton Senna. The Right to Win [min 24:47] retrieved at Senna Legacy <https://www.youtube.com/watch?v=pWaCkAVQoIU>

¹⁵⁶ Ayrton Senna on Monte Carlo Grand Prix, 3-14-1988 retrieved at https://www.youtube.com/watch?v=aXbgs5fulSw&t=0s&list=PLg2gC6EfeYM8HpDI5dSXDJ_Oh1KfHOY3s&index=16

cyclist who was also doing a mental silence meditation technique¹⁵⁷ described in a case study to Ramesh Manocha his experience “You do the physical practice in training leading up to the event, and the meditation is like the mental practice for getting in that zone at the event” (Manocha, 2017, p 222). In this respect, research and theory confirms the traditional descriptions of meditation practice as a method that can help to achieve an optimal state of being. Not only in the passive time of meditation, but also in the following activities, which place the highest demands on physical and mental abilities.

In summary, we can say that the relatively current theory of self-actualizers and self-transcenders of Maslow and Csikszentmihalyi’s flow theory fit the traditional descriptions of meditation effects. Both come from a psychology that explores the optimal states of being. Before we get to the traditional meditation techniques and scriptures, we will take a look at the popular modern manifestations of meditation techniques and their scientifically attested effects.

2.2 Meditation in Western Social Context - Common Practices in the global West

2.2.1 General Research of Yoga and Meditation

Depending on the scientific background that shapes the perspective, there are different understandings of meditation and its effects.

Meditation is essentially a hypo metabolic state with parasympathetic dominance different from sleep that elicits physical and mental calm and has been reported to enhance psychological balance and emotional stability (Rubia, 2015). Meditation is an essential element in all major contemplative spiritual and philosophical traditions (Goleman, 1988; Walsh, 1999). Meditation releases the tensions developed in everyday life and opens the

¹⁵⁷ Sahaja Yoga Meditation

knots tied by the old habit of reacting in an unbalanced way to pleasant and unpleasant situations. It develops positive creative energy for the betterment of the individual and society (Anderson, 2000). Meditation is a process that alters one's consciousness. Meditation is a systematic narrowing of attention that slows the metabolism and helps produce feelings of relaxation (Rathus, 1997, p.13). With the everyday practice of Meditation, the mind settles in a peaceful stage, the work efficiency is increased, the individual is enlightened, bringing progress in society and ultimately it leads to the national and global development taking place. (Kapadia, 2005, p.202). "Meditation may be of great value (in psychotherapy) through its capacity to awaken altered states of consciousness that may profoundly reorient an individual's identity, emotional attitude, and sense of wellbeing and purpose in life" (Bogart, 1991, p.408).

Yoga helps bring about subtle attitudinal changes in life. If taught earlier on in life and implemented in schools, it may bring a social, cognitive and emotional change into the society. Being able to harness ambition in a positive manner rather than through negativity, yoga will not only help the student to excel, but also make them a healthier and happier person for the country and community (Kumar, 2012). In recent years, meditative practices have been taught in secular forms that do not require adherence to cultural and religious beliefs (Duerr, 2004).

But the scientific literature on experimental research is largely dominated by two types of meditation practices in terms of number of articles. Much of the studies on the effects of meditation relate to Mindfulness-Based Stress Reduction (MBSR), a standardized 8-weeks course created by Jon Kabat-Zinn, also often referred to in the more general term Mindfulness Meditation (MM). The other type is Transcendental Meditation (TM); many Hollywood celebrities, show hosts, and musicians follow and recommend¹⁵⁸ this registered trademark meditation. These two types of practice's can be found in many major cities in America and the UK and they have been successful in monetizing their meditation classes.

¹⁵⁸ David Lynch, Jerry Seinfeld, Oprah Winfrey, The Beatles, Hugh Jackman, Clint Eastwood, Mick Jagger, Sheryl Crow, Ellen DeGeneres, Tom Hanks, Jennifer Lopez, and many more (retrieved at <https://maharishischool.org/school-news-blogs/25-celebrities-who-know-transcendental-meditation/>)

The social representation of the scientific community on meditation is in large parts influenced by these two practices, because of the sheer number of studies. The scientific community is impressed by the quantity of the studies, which suggests relevance, but not at all by the quality of the studies and their reported effects. Meta-Research (Büssing et al., 2012a; Boehm et al., 2012; Cramer et al., 2013; McGee 2008; Alexander *et al.*, 1994b; Grossman *et al.*, 2004) covers many existing studies on meditation and considers the scientific quality, general pattern of shown effects as well as the quality of these effects¹⁵⁹.

The overall impression of these many times highly reputed meta researchers (e.g., from the Johns Hopkins University) is that there is not much evidence for large effects for these two types (MBSR/MM and TM) of meditation. In Meta-Meta-Research it was found that Meta-Research criticizes many times a low methodic level, which goes together with a low internal validity and an over interpretation of the results in the primary studies (Dunlap *et al.* 1996). Which means that meditation research is often poorly done, with small samples, small interaction times, and immature empirical methods. For example, a meta-analysis of Peter Sedlmeier et al. reported: "Mostly because of methodological problems, almost 34 of an initially identified 595 studies had to be excluded. Most studies appear to have been conducted without sufficient theoretical background" (Sedlmeier et al., 2012, p. 1139).

In addition, there is no such thing as one meditational effect for all types of meditation. A clear distinction must be made between which type of meditation shows which effect. A general effect that could be attributed to all types of meditation practices cannot be found from the existing research (Ospina et al., 2007, p.6).

We will take a short look at the different effects and research of the two dominating methods MBSR/MM and TM. Before we go deeper into the meditation method examined in this work, Sahaja Yoga Meditation, and its traditional roots. Mental Silence, as a result of SYM practice, is a significantly different state of being than resulting from MBSR/MM and TM and SYM shows significantly different results than other meditation states (Manocha *et al.*, 2010).

¹⁵⁹ Can the shown effects be considered as high or are they rather low?

2.2.2 Research on MBSR/MM and TM

2.2.2.1 Mindfulness Based Stress Reduction and Mindfulness Meditation

Mindfulness is a term that originates from Buddhist contemplation practices. But the term Mindfulness Meditation is used today for many meditation programs, that were developed out of various practices. “There has been a popularization and secularization of mindfulness that simplifies the construct and sometimes even equates mindfulness with relaxation and the elimination of stress” (Brazier, 2016; Riin *et al.*, 2019).

Mindfulness Based Stress Reduction (MBSR) is the most prominent variant (Hanh, 1976). The MBSR-program is a rather strict secularized meditation that took out everything that could connect it to Buddhism or eastern mysticism¹⁶⁰. Jon Kabat-Zinn developed the Mindfulness-based stress reduction (MBSR) which is a fixed 8-week-program mixing mindfulness meditation with Hatha yoga practices (Kabat-Zinn, 1990). Mindfulness is defined as “paying attention in a particular way: on purpose, in the present moment, and non-judgmentally” by Jon Kabat-Zinn, developer of MBSR (Kabat-Zinn, 2005; Black, 2011). The aim is not “to have no thoughts”, but “the idea is to observe with gentle curiosity any mental state, including thoughts and emotions” (Myers *et al.*, p. 9).

MBSR was researched first at the University of Massachusetts Medical School for treating chronic pains¹⁶¹. In current meditation research, mindfulness meditation dominates when it comes to the quantity of meditation research (Riin *et al.*, 2019). “Mindfulness-based practices have produced positive clinical outcomes for anxiety, immune protected

¹⁶⁰ Interview with Jon Kaabat-Zinn. The Guardian. Robert Booth. Interview: Master of mindfulness, Jon Kabat-Zinn: ‘People are losing their minds. That is what we need to wake up to’ 22 Oct 2017 retrieved <https://www.theguardian.com/lifeandstyle/2017/oct/22/mindfulness-jon-kabat-zinn-depression-trump-grenfell>

¹⁶¹ Jon Kabat-Zinn founded in 1979 the Mindfulness Based Stress Reduction Clinic at the University of Massachusetts Medical Center. He is also the founder of the Center for Mindfulness in Medicine, Health Care and Society at the University of Massachusetts Medical School.

functioning assays, pain, and stress-related skin disorders” (Cahn & Polich, 2006, p. 201; Beauchamp-Turner & Levinson, 1992; Carlson *et al.*, 2003, 2004; Davidson *et al.*, 2003; Kabat-Zinn, 1982, 2003; Kabat-Zinn, Lipworth, & Burney, 1985; Kabat-Zinn *et al.*, 1998; Miller, Fletcher, & Kabat-Zinn, 1995; Shapiro & Walsh, 2003).

The MBSR and other mindfulness programs are commercially successful. In 2017 the Headspace app, that teaches meditation in the MBSR style had 18 million people subscribers¹⁶². Other “Mindfulness” programs have a spin-off flavor, as they integrate and adopt more or less from the MBSR program while adding some additional component¹⁶³.

The growing attention on MBSR seems to bring business opportunities that alarm the scientific community. Scientists want to ensure that the right intentions are behind the programs. And that they are beneficial for the individual. As it is seen, that there is “comparatively little empirical evidence on mindfulness in industrial and organizational psychology, there is a risk that mindfulness interventions will be sold as a panacea to fix wellbeing, motivation, and performance-related problems in organizations without changing potentially underlying structural problems.” (Hülshager, 2015, p. 674). In addition, there is skepticism about the longevity of MBSR effects:

“Overall, research has documented positive effects of slimmed versions of MBSR for employees' psychological functioning and well-being [...]. Importantly, however, all studies cited above measured training effects immediately or shortly (up to 2 weeks) after the training. When engaging in mindfulness training and practice, positive effects may appear rather quickly, but they may also fade out quickly once one stops practicing. We consequently know little about the sustainability of effects found for mindfulness interventions in general and for low-dose interventions. In the absence of such evidence, we should thus be cautious not to perceive mindfulness as a quick fix to well-being and health-related problems” (Hülshager, 2015, p. 675).

¹⁶² The Guardian. Robert Booth. Interview: Master of mindfulness, Jon Kabat-Zinn: ‘People are losing their minds. That is what we need to wake up to’ 22 Oct 2017 retrieved <https://www.theguardian.com/lifeandstyle/2017/oct/22/mindfulness-jon-kabat-zinn-depression-trump-grenfell>

¹⁶³ Zindel Segal, Mark Williams und John Teasdale developed Mindfulness-Based Cognitive Therapy (MBCT)¹⁶³. Dr. Erik van den Brink und Frits Koster from the Netherlands developed also an 8-week-program on Compassion: Mindfulness-based Compassionate Living (MBCL). Christopher Germer und Kristin Neff (2012) combined Mindfulness with self-compassion skills to a program Mindfulness Self Compassion (MSC) which can be done without or in addition to MBSR. Advanced training seminars for professionals and beginner courses is common offers.

The Johns Hopkins University did a systematic review and meta-analysis¹⁶⁴ to assist clinicians with evidence about the real health benefits of Mindfulness Meditation (MM) programs. They found that Mindfulness Meditation programs showed only “moderate evidence to improve anxiety, depression and pain and low evidence to improve stress/distress and mental-health related quality of life”, and “no effect or insufficient evidence of any effect of (the observed) meditation programs on positive mood, attention, substance use, eating, sleep, and weight” (Goyal *et al.*, 2014, p. 1).

Despite being popular in the public and being largely discussed in the scientific community MBSR did not show large effects. While it helps some people, others don't show any beneficial effects and “a number of individuals may suffer moderate to serious adverse effects” (Farias & Wikholm, 2016, p. 329; also Van Dam, *et al.*, 2017).

The practice of MBSR itself as a fixed and structured, 8-weeks course of purely worldly activity that mixes hatha yoga gymnastics with concentration exercises is very different from traditional meditation practices, which are much more extensive. The main difference between MBSR and traditional types of meditation (and Sahaja Yoga Meditation) is how they approach thoughts. MBSR observes and follows the thoughts with curiosity – which literally makes the mind full. While traditional Patanjali Yoga and current Sahaja Yoga Meditation specifically aim for the opposite – a thoughtless state that clears the mind.

The second most discussed meditation form is Transcendental Meditation. It differs widely from MBSR as well as from Patanjali Yoga and SYM.

2.2.2.2 Transcendental Meditation (TM)

Transcendental Meditation is a registered trademark mantra meditation program. TM is aiming for “an effortless state where there is no focused attention” (Goyal *et al.*, 2014, p. 2). This kind of mind wandering distinguishes TM from MBSR, where there is a concentration on thoughts and feelings, but also from traditional Hindu meditation where

¹⁶⁴ reviewing 17,801 citations, including 47 trials with 3,320 participants

attention is focused on perception, but above all without giving thoughts to it. The TM practice is described as “silently repeating a word or mantra to achieve a meditative state. When distracting thoughts arise, attention is repeatedly redirected back to the mantra” (Waters *et al.*, 2015).

Mantras are ‘sound bodies’ of a spiritual force, that should manifest.

“In the practice of religious life, the importance and decisive power of the spoken word, and especially of the well-formulated word, has always been understood. The spoken word is an act, an exercise of power, revealing an attitude of the speaker and containing something creative. Especially when they combine into formulas, into phrases definite in the sound, rhythm and order of their terms, words possess the greatest might and effect, whether dangerous or beneficent” (Gonda, 1963, p. 244).

A mantra means a “mental identification” (Gonda, 1963, p. 247), in case of Rigvedic mantras with a deity¹⁶⁵, in TM with an unknown entity¹⁶⁶. Traditional yoga recommends the use of mantras only after enlightenment, i.e., after a connection with the divine has been established, and warns against inappropriate use of mantras.

For Transcendental Meditation there exist already many reviews of psychological studies. All attest the superiority of TM compared to other methods. But they are “mostly conducted by members of the Maharishi International University” (Sedlmeier *et al.*, 2012, p. 1140)., that was founded by Maharishi the founder of TM. And “[t]hese analyses are, however, limited in matters of both content and methods” (Sedlmeier *et al.*, 2012, p. 1140). Reliable and independent sources are therefore rare, despite, or perhaps because of, the flood of publications.

In the Johns Hopkins University’s systematic review and meta-analysis of mantra meditation programs (TM) no improvement of the examined outcomes were found. They

¹⁶⁵ “The essence of a mantra is [...] the presence of the deity: only that mantra in which the devata has revealed his or her particular aspects can reveal that aspect” (Gonda, 1963, p. 248)

¹⁶⁶ “It is indeed true that the term mantra, because of the power considered to be inherent in formulated inspired thoughts and uttered words, also implied that the ‘formula’ was a means of wielding supra normal power” (Gonda, 1963, p. 248-249). The advanced version of TM is called the TM-Sidhi program which intends to lead to the so called ‘Yogic Flying’. The participants in the program sit cross-legged in a lotus position on mattresses until the muscles contract without the participants efforts and they jump like frogs over the mattresses.

found no evidence of any improvement regarding anxiety, depression, pain, stress/distress, mental-health related quality of life, positive mood, attention, substance use, eating, sleep, or weight, through the practice of mantra meditation programs (Goyal *et al.*, 2014, p. 6). Instead, the systemic review of Farias *et al.* (2020) found plenty reports of adverse events¹⁶⁷ for Transcendental Meditation in their meta-analysis of 83 studies.

2.2.3 Meditation Adverse Events

Meditation practices become more and more popular, and the growing number of research reports are in a great quantity written with positive tenor. Surprisingly or not, a large quantity of the research is somehow connected to the founders of the respective method (Jon Kabat-Zinn for MBSR and Maharishi International University for TM). Independent Meta-analysis often reports poor methodology or a lack in statistical evidence for the claimed benefits in these studies. Another popular type of study largely consistently uses "meditation" as a term for a particular observed practice, and it is very difficult to find out what type of meditation they are referring to; In some cases, several methods are used simultaneously and in an undifferentiated manner next to one another. Since the practices of the various techniques vary widely, it seems highly advisable to see which meditation technique is being observed, especially when it comes to possible harmful effects.

Regarding meditation adverse events, meaning negative effects of meditation practices, the study of Farias *et al.*, states, "despite this early interest in meditation adverse events (MAEs), the prevailing reports of meditation for most of the last 20 years have largely ignored the possibility of these effects or even denied it" (Turner *et al.*, 2011; in Farias *et al.*, 2020). In addition, not every adverse event has to be reported. The European Union and the USA distinguish in medical context between Serious Adverse Events (SAE) and Adverse Events (AE). SAE are categorized as life-threatening or hospitalization demanding, while AE are more often referred to as "undesirable" or "untoward" which can be understood euphemized as "not helpful". Only SAE have to be reported, so AEs may be undiscovered in literature.

¹⁶⁷ Details of that study and others are given in the next subchapter.

Mindfulness

The qualitative analysis of Tim Lomas, Tina Cartwright, Trudi Edginton and Damien Ridge (Lomas *et al.*, 2015) did a study with 30 males¹⁶⁸ meditators of the Buddhist related meditation practices Mindfulness and Loving-Kindness. While for approx. 75% of the participants found an improved well-being the study discovered in approx. 25% of the interview data substantial difficulties. The four main problems found in the case study were in increasing severity order: 1. Some participants found the methods a “difficult skill to learn”, as the men were not able to concentrate on inner experiences and they could not integrate regular meditation sessions in their daily schedule. 2. “Troubling thoughts and feelings” 3. “Exacerbated mental health issues, such as depression and anxiety” 4. “Psychotic episodes” (Lomas *et al.*, 2015, p. 848).

These types of problems occur with various forms of Buddhist mindfulness meditation and at least suggest that they may not be suitable for everyone. “It takes certain ego capacities to practice [...] especially vipasana (insight) meditation and other forms of mindfulness meditation, that like most therapies, are based on observing moment-to-moment experience – the desires, excitements, pleasures, satisfactions, anxieties, fears, humiliations, frustrations, rages, disappointments, self-doubt and even ecstasies that self-discovery entails” (Engler, 2003, p.36). Too little ego capacity, as well as too much ego by the way, can lead to negative or no positive effects.

If the ego is properly developed to deal with the challenges of these forms of mindfulness meditation, positive effects are considered in the following areas: “Psychologically, this kind of practice strengthens fundamental ego capacities, particularly the capacities for self-observation and affect tolerance. It also increases the synthetic capacity of the ego by allowing for potentially destabilizing insights and experiences that conflict with

¹⁶⁸ The sample was chosen only by male practitioners as gender related expectations were considered by them to play a role in the acceptance of meditation programs. The gender role expects men have to be hard, tough and in control of the situation.

“Zen practice is hard, both emotionally and physically. [...] Too often in the past it has been the physical difficulty of practice that has been emphasized [...] as if Zen were a matter of cultivating toughness and endurance. This kind of approach can lead to a not-so-subtle elitism and pride in one’s own capacity to handle any sort of pain or challenge that life throws our way” (Engler, 2003, p. 256)

normative representations of self and others” (Engler, 2003, p.36). From the point of view of meditation theory, mindfulness meditations concentrate on the sun channel (discipline, awareness, control, ...), but rather neglect the capabilities of the lunar channel (spontaneous, emotional, creative, intuitive, ...). Therefore, a neglect of the abilities that connect to the lunar channel or an over activity of the sun-channel can lead to malfunction of the lunar-channel which can lead to symptoms like the shown (depression, anxiety, psychotic episodes).

Transcendental Meditation

Lazarus and Mayne found "relaxation induced anxiety and panic, paradoxical increases in tension, and parasympathetic rebound" (Lazarus *et al.*, 1990, p. 261) as negative effects for Transcendental Meditation. Other studies found negative effects of TM like auditory and visual hallucinations¹⁶⁹ (Persinger, 1993) (physical tension, restlessness, anti-social behavior, anxiety, depression, impulsiveness, suspiciousness, withdrawal¹⁷⁰ urinary, amnesia, tongue biting, confusion (St Louis & Lansky, 2006) suicidal attempt, depersonalization (Lazarus, 1976), psychosis, mania, delusion (French *et al.*, 1975).

Mindfulness, MBSR and TM

Farias *et al.*, (2020) were observing 83 articles with n=6464 meditation participants. Though other meditation practices were included¹⁷¹ mindfulness or mindfulness-based interventions (MBIs) (61; 71%) and Transcendental Meditation (14; 16%) were the majority. They classified an adverse event as a harmful occurrence¹⁷². Meditation adverse events (MAE) were counted, if at least once an MAE occurred, if available a frequency how many times the MAE occurred was given.

¹⁶⁹ Frequency of adverse events. (Number of participants reporting at least one adverse event.)

¹⁷⁰ Frequency of adverse events 73

¹⁷¹ One observation in the Meta-Analysis of Farias (Pavlov *et al.*, 2015) reported beneficial effect of sahaja yoga meditation on cardiovascular reactivity. Impact of long-term meditation practice on cardiovascular reactivity during perception and reappraisal of affective images.

¹⁷² In the context of Meditation Adverse Events (MAE) the authors Farias *et al.*, (2020) emphasized that as well Serious Adverse Events (SAE) as Adverse Events (AE) were considered as harmful and as MAE.

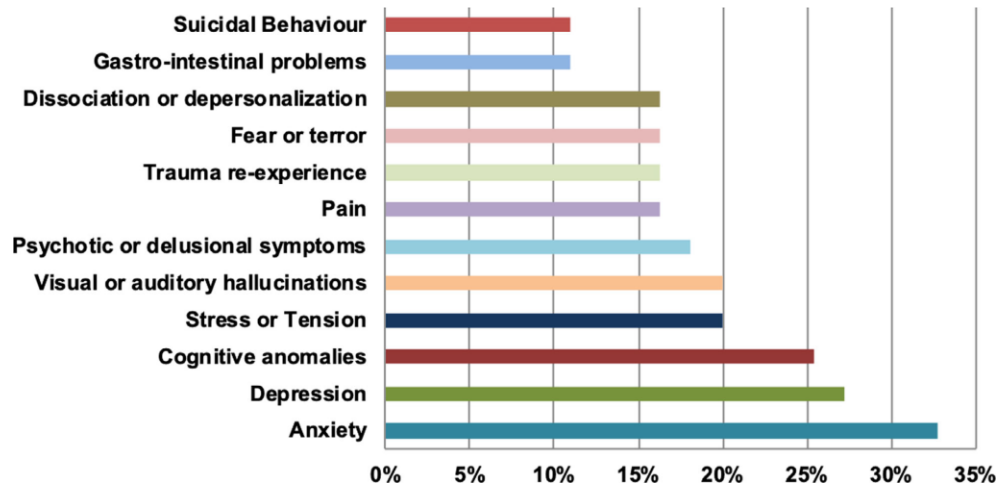


Figure 14: Proportion of most common meditation adverse events
(Source: Farias *et al.*, 2020)

The figure 14 shows a bar graph with the likelihood of negative effects appearing in the observed articles about meditation techniques (mostly Mindfulness and TM). “The most common AEs were anxiety (33%, 18), depression (27%, 15) and cognitive anomalies (25%, 14); gastrointestinal problems and suicidal behaviors (both 11%, 6) were the least frequent” (Farias *et al.*, 2020, p. 1). Possible reason for the mentioned psychological challenges regarding Buddhist meditation some authors consider a too high intensity of the meditation practice as a possible cause for negative effects, also the competence of the teacher or the a priori state of the participant could play a role (Farias *et al.*, 2020).

While going back to the roots of these meditation practices various authors (Farias *et al.*, 2020; Chan, 2013; Engler, 2003) found in early Buddhist scriptures descriptions of possible adverse events. “Similar symptoms have been recorded in the traditional meditation literature. For example, one early compendium of Buddhist meditation techniques from the 5th century CE, the Dharmatrata Meditation Scripture, reports that, if the meditation is not carried out properly, the mind can become unstable, restless, or confused, and the meditator feel dull, confused, and sunken” (Chan, 2013). These negative effects are associated with wrong or incorrect meditation practices (Ahn, 2019, p. 114).

2.3 Meditation and Yoga in the Indian/Hindu Context

Meditation and Yoga are closely connected to personal development on multiple levels. Lower levels of development include physical wellbeing. Higher development levels include moral development. Moral development is part of character building, which is an essential part of personal development, which should be part of the education process and in our times includes a morality that contains the values of sustainability, which actually can be traced back to fundamental morality and therefor to eternal values and therefor they are not new but run under a new label.

James R. Rest distinguishes four components of moral behavior: moral sensitivity, moral judgment, moral motivation, and moral character/ implementation (Rest, 1994). Lawrence Kohlberg's distinguished 6 different stages of moral reasoning came out of the finding that Socratic classroom discussions can support the moral development of students without a tendency of indoctrination; they incorporated Durkheim's approach. "John Dewey and Emile Durkheim are philosophical giants in the field of moral education" (Dill, 2007, p. 221).

"The secular nature of morality that Dewey and Durkheim offered may indeed be a sufficient source, but not, as they seemed to understand, if it embraces a language of neutrality and ignores a sacred, religious quality that carries a certain authority. [...] Orienting the focus to the level of beliefs, which can be both religious and secular, begins to name the various sources of morality and authority for moral education. Thickening the discourse in this way may harness the promise (without forgetting the peril) of moral education in the late-modern age" (Dill, 2007, p. 234).

The basis of Indian spirituality and of any religion is, what in Sanskrit is called dharma; the attempts to translate dharma with one English word reach from morality, religion, law, duty, norm, social usage, right conduct, justice to righteousness (Holdrege, 2004, p. 1). Dharma encompasses social values, social duties and principles of order for every sphere of activity, from the family to the caste/class to the whole of society, even to the whole cosmos. "In Hindu traditions dharma is an encompassing category that incorporates and at the same time transcends the distinctions among religion, ritual, law, and ethics that are

generally posited in Western traditions” (Holdrege, 2004, p. 1). The fundamental principles of any of the big religions are the same. These roots of dharma have been incorporated into any culture, social contract and social system; they build the ideologic base of any society.

The differences between the cultures, emerging from these different religions, do not come from a difference of the original message, they come from the shortcomings of the individuals and the society, that fail to live up to those basic principles. Over the centuries and millennia, the different cultures and societies have developed their own social realities with different moral concepts through different adoption processes (partially described in Chapter 1.2), which may differ more or less strongly from the religious basis. “Moral principles are culturally variable in a fundamental way” (Kohlberg, 1981, p. 108). An examination of 45 studies in 27 countries by J. R. Snarey found “in mean moral maturity scores [...] Taiwanese, Kibbutzniks, Indians, and Turkish subjects all ranked higher than parallel groups from the United States at one or more points in the life cycle” (Snarey, 1985, p. 228). Cross-cultural studies show different perceptions of social responsibilities in India and the USA (Miller *et al.*, 1990; Shweder *et al.*, 1987). While Indian tended to regard role-related interpersonal responsibilities as a question of morality, Americans tended to see those responsibilities as a matter of personal choice. Even more, Indians were arguing to hold breachers of the moral codes accountable (Miller & Luthar, 1989).

Indian society can be considered more traditional and (as laid down in chapter 1.1) closer to their base of spirituality. “Everywhere I found a cultural background which had exerted a powerful influence on their lives. This background was a mixture of popular philosophy, tradition, history, myth and legend, and it was not possible to draw a line between these. Even the entirely uneducated and illiterate shared this background” (Nehru, 2010, p. 61).

This on the one hand makes Indians more open to traditional methods of personal development like meditation, they also have at least a rough understanding of meditation and appreciate the idea of character building that corresponds with meditation. As it is a method coming out of the Indian culture and there is no strong secularization in India, as spirituality is part of everyday life, Indians do not fear that meditation may be interlinked with spirituality. For Westerners this is different, as Christian societies are secularized,

there are reservations either about spirituality as such, since it is perceived as unscientific and only a form of belief, or against a form of spirituality that is perceived as foreign. Other parts of Western societies either search for “attested” secularized versions of meditation, which partly explains the success of Mindfulness-Based Stress Reduction (MBSR), or they appreciate the universal aspect of spirituality and especially the individual connection and experience of it.

Another aspect that distinguishes the Indian context from the Western context is that the concepts of sustainability when it comes to nature, art distinction and climate change maybe still closer to the Indian value and belief system.

“Respect for all forms of life in the Indian tradition is related to a salient characteristic of Indian thought, one which construes reality as an integral whole. This principle minimizes duality and emphasizes connectedness and harmony. This monistic view of reality leads to a view of nature in which life is classified in terms of degrees of consciousness” (Crawford, 1982, p. 150; in Vasudev, 1987, p. 114).

Crawford characterizes the attitude towards nature in the Hindu context as biocentric, in the West as anthropocentric (Vasudev, 1987, p. 114). Meaning that in the West a human-centered view prevails that considers humans as the most important element of existence and the only, or primary source of moral. While in India nature and animals¹⁷³ are part of creation and fundamental interventions in the balance of creation are acts against the natural Dharma. Unlike in the western understanding, Dharma is considered to consist of universal laws, rules of conduct and moral principles made by God and handed down to people in the ancient scriptures that were written down by sages, such as the Bhagavad Gita.

¹⁷³ e.g., the holy cow

2.3.1 Moral reasoning in India, the Bhagavad Gita and different forms of Yoga

The old Indian epics Mahabharata and Ramayana tell (like the Tora and the Bible) the ancient history in the language of that time and are part of the social context in India. They are widely known. “Every incident and story and moral in them were engraved on the popular mind and gave a richness and content to it. Illiterate villagers would know hundreds of verses by heart and their conversation would be full of references to them or to some story with a moral, enshrined in some old classic” wrote Nehru (2010, p. 61).

The most important text is the Bhagavad Gita. The Bhagavad Gita¹⁷⁴ is the source of the basic Hindu ideas about dharma, bhakti, and moksha (roughly translated as moral concepts, love to God and redemption). The Bhagavad-Gita is a big corner stone of Indian culture and remains a big reference in the mindset of Indian society today¹⁷⁵. “It has profoundly influenced the spiritual, cultural, intellectual and political life of the country [India] throughout the centuries, and it continues to do so today. [...] [Knowing it helps] to understand the mental processes of India's thinkers and leaders” (Prabhavananda, 2012). It was first translated in 1784 by Charles Wilkins and “deeply influenced Euro-American philosophers as Heidegger, Nietzsche, Schopenhauer, Husserl and writers like Thoreau, Emerson, Whitman, E.M. Forster, and T.S. Elliot” (Gupta, 2006, p. 11).

The Bhagavad Gita describes three ways for salvation, three types of Yoga: Bhakti Yoga (devotion), Jnāna Yoga (knowledge) and Karma Yoga (deed). “All yoga’s offer a direct road to enlightenment if followed fully. Whether a particular road is suitable to reach this goal is a personal matter, largely depending on where you are coming from” (Marchand,

¹⁷⁴ The Bhagavad Gita is part of the Mahabharata, the great epos of the origins of India and the fight between the good and the evil, encountering in two parts of the family “Bharatas”, the Pandavas and the Kauravas, fighting against each other for power. In the Gita Lord Krishna tells to Arjuna (one of the Pandavas) the secrets of life.

¹⁷⁵ “If secularization – understood as relative decline in religious influence and in the importance of religious identity – is to proceed apace, then it must address above all that religious system, Hinduism, which purports to describe the beliefs, rituals and practices of the overwhelming majority of the population” (Vanaik, 1997, p. 5)

2007, p. 4). The enlightenment process is regularly to be understood as a slow and gradual process, but it can also happen spontaneously; only a few people, like Siddhārtha Gautama Buddha, have achieved full enlightenment.

Bhakti Yoga – Love

Bhakti Yoga is the Yoga of love and devotion to God. Swami Vivekananda was a key figure for the introduction of Hindu philosophy in the USA, England and Europe. He gave examples to explain the far-reaching concept of Bhakti:

- “Bhakti [...] is intense love to God”.
- “When a man gets it, he loves all, hates none; he becomes satisfied forever.”
- “This love cannot be reduced to any earthly benefit, because so long as worldly desires last, that kind of love does not come” (Vivekananda, 2016, p. 3-4).

The principle of bhakti is thus directed to God, but also includes all of creation, all human beings, all animals and all of nature. And it is of a different kind of love than normally known to man, a love of higher quality, unselfish love without expecting reward.

Although it may seem to be the easiest path to yoga, still it is difficult for many to attain. As for many the only known way to love their own ideal/God, is to hate all the other ideals (and religions). Which gives lead to fundamentalism and extremism (Vivekananda, 2016, p. 3-4). And this lowest form of love is in no way an expression of divine love from the inside.

Although bhakti can at first glance be seen as a Hindu construct because it is written down in an ancient Indian script, the love for God and creation are universal principles that are also found in Islam, Christianity and other religions. And unfortunately, similarly, examples of the lowest form of love - hatred for the other - are to be found also in every culture. While Bhakti Yoga is the path to enlightenment through the side of emotions, the access through the heart, Jnana Yoga is the path of knowledge and access through the mind.

Jnana Yoga – Knowledge

"Jnana Yoga or Gyana Yoga is the yoga of true knowledge. It is based on the Hindu philosophy of nondualism, called advaita (nondual) vedanta (Vedic knowledge)¹⁷⁶. [...] Jnana Yoga looks into the truth about who we are and what we are experiencing. The full realization of this truth brings enlightenment" (Marchand, 2007, p.3).

Jnana Yoga consists of four steps:

- 1) Listen (Shravana) preferably to a self-realized person,
- 2) Think or reflect (Manana) deeply about that (also by asking the self-realized master)
- 3) Meditate (Nididhyasana) to go beyond the intellectual and open the intuitive understanding.
- 4) Realize the truth - even better your own self (Anubhava)

The most critical point for Jnana Yoga is its starting point. One has to find and listen to a self-realized (self-actualized, enlightened) teacher, master or guru. If this point is missed the path can even lead away from and not towards truth and enlightenment.

For cultural reasons, alarm bells ring for some people when they hear - you have to look for a guru and learn from him. In a way, it is right and important to be careful, because there have been and are too many false gurus. False gurus can ruin you. But one should not infer from the existence of many bad teachers that there are no good teachers and therefore give up the undertaking immediately. You can also try to master everything by yourself, but that would mean a long, and sometimes very long, road of trial and error, a search in the dark for the unknown. Or you can and must trust your ability to differentiate and judge.

Anyway, the finding of a good teacher is critical for every learning endeavor. Whether you want to learn music, language, or math, a poor teacher can ruin your enjoyment or interest,

¹⁷⁶ "A similar nondualistic view of reality is held by many branches of Buddhism, including Zen, by Taoism, by Islamic Sufism, as well as by some branches of Christianity that follow the Gospel of Thomas. Some of its best-known Hindu teachers are Vasishta, Adi Shankara, Ramana Maharshi and Nisargadatta Maharaj" (Marchand, 2007, p.3).

lead you down long, annoying, difficult paths, or just want you to return to their class as often as possible for an income to secure. While a good teacher can bring you joy, make it very easy to access, and may not even take money for his / her guidance.

Karma Yoga

Karma¹⁷⁷ Yoga is more a principal of life or a cosmic rule from which man cannot escape. If he knows or believes it does not play a role for its consequences. If one is conscious of its existence one can try to positively influence one's own life. Karma Yoga seems to be the most known Eastern principle in the West, nevertheless it is the most wrong understood principle.

Swami Vivekananda was a Hindu monk and highly respected scholar. He represented India at the 1893 Parliament of the World's Religions which made him famous. He was a key figure for the introduction of Hindu philosophy in the USA, England and Europe. His illustration of the belief in Karma is considered to explain the values of a large part of Indian society in an understandable way. As it is larger concepts, it needs a bit larger explanation:

“The goal of mankind is knowledge. That is one ideal placed before us by Eastern philosophy. Pleasure is not the goal of man, but knowledge [...]. This knowledge, again is, inherent in man. No knowledge comes from outside; it is all inside. What we say a man “knows”, should, in strict psychological language, be what he “discovers” or “unveils”; what a man “learns” is really what he “discovers”, by taking the cover off his own soul, which is a mine of infinite knowledge. We say Newton discovered gravitation. Was it sitting anywhere in a corner waiting for him? It was in his own mind; the time came, and he found it out. All knowledge that the world has ever received comes from the mind; the infinite library of the universe is in your own mind. The external world is simply the suggestion, the occasion, which sets you to study your own mind, but the object of your study is always your own mind. The falling of an apple gave the suggestion to Newton, and he studied his own mind. He rearranged all the previous links of thought in his and discovered a new link among them, which we call the law of gravitation. It was not in the apple nor in anything in the center of the earth. All knowledge, therefore, secular or spiritual, is in the human mind. [...]

Everything we do physical or mental, is Karma, and it leaves it marks on us. [...] All the actions that we see in the world, all the movements in human society, all the works that we have around us, are simply the display of thought, the manifestation of the will of men. [...] If you really want to judge of the character of a man, look not at his great performances. Every fool may become a hero at one time or another. Watch a man do

¹⁷⁷ The word karma is derived from the Sanskrit Kri, to do; all action is Karma. Technically this word means the effect of action.

his most common actions; those are indeed the things which will tell you the real character of a great man. Great occasions rouse even the lowest of human beings to greatness, but he alone is the really great man whose character is great always, the same wherever he be. Karma and its effect on character is the most tremendous power that man has to deal with. [...] No one can get anything unless he earns it. This is an eternal law [...].

We are responsible for what we are; and whatever we wish ourselves to be, we have the power to make ourselves. If what we are now has been the result of our own past actions, it certainly follows that whatever we wish to be in the future can be produced by our present actions; so, we have to know how to act" (Vivekananda, 2015, p. 1-4).

Karma Yoga is deeply "rooted in Indian philosophical beliefs of the law of cause and effect (karma), the divinity of every being (atma), and freedom from the cycle of birth and death (moksha). Karma-yoga emphasizes collective solidarity, considers moral behavior as a duty, emphasizes interpersonal responsibilities and social conventions" (Mulla & Krishnan 2013, p. 349). Mulla *et al.*, proposed Karma-Yoga as "a holistic model for moral development in the Indian context" (*ibid*, p. 348), as "Western models of moral development have often failed to show validity outside their culture of origin" (*ibid*, p. 339).

The Karma principle, the respect for all forms of life and the non-violence principle are closely related to the concept of rebirth. In regard to the relationship of humanity and nature and also in regard to international and intercultural relationships the belief in rebirth has large impacts on society and on individuals. The consequences of the Karma belief get clearer when contrasted to an atheist view of life, for whom life just starts and after death there is nothing. An atheistic outlook on life will lead to an "after us of the flood" mentality in which the exploitation of nature and other people is permitted; unless one's ego forbids further exploitation, which in turn is to some extent related to the moral values of society. A believer in rebirth and a follower of Karma Yoga 'knows' that it is in his own interest to live as harmonious as possible with nature and all living beings, as the deeds of this life do not only affect this life, but also the following life. There is nowhere to hide secret amoral behavior, everything is recorded and will have consequences – how soon is not known, it may be in this life, it may be in the next.

The Bhagavad Gita describes three types of yoga as paths to enlightenment, personal development and the fulfillment of the purpose in life. All three – love, knowledge, and action (bhakti, jnana, and karma) – represent more a lifestyle or guidelines for life rather

than any particular method or technique to achieve that state. The first written, hands-on description of how methodically the state of yoga can be achieved was the Yoga Sutras of Patanjali, although they also contain many basic guidelines for life as a framework.

2.3.2 Patanjali Yoga - the archetype of yoga and meditation

Patanjali is called the "father of yoga". It is estimated today that he lived around 200 BC – 400 A.D.. The exact dates of his life, and actually very little of his life, is known, what is known plays mainly in the realm of myths and legends. But he is considered to be the author of the yoga sutra, the classic guide to yoga. The Yoga sutras are very widely accepted as the acknowledged essential text on Yoga and are therefore amongst the most relevant text for Hindu tradition (Desmarais, 2008, p. 15-16). It is believed that Patanjali wrote down the first full extent yoga (and meditation) treatise by covering the oral transmissions of the past. All the meditative roots of thousands of years tradition were collected in his treatise and out of it sprang all branches of yoga and meditation (Hartranft, 2003, p. 2). He is quoted in many medieval health-science related texts and described as a medical authority in Yogaratnakara, Yogaratna-samuccaya and Padarthavijnana (Meulenbeld, 1999). The Yoga sutras were translated into 40 different Indian languages (White, 2014).

Yoga is defined in Chapter 1 of the Yoga sutras by Patanjali as “a multifaceted method of bringing consciousness to a state of stillness” (Hartranft, 2003, p. 1).

This state of mind, a thoughtless awareness, where no thoughts arise but one is aware of everything and conscious about it, is the ultimate goal. Because it dissolves the fundamental fallacy of life, which ultimately leads to a lot of suffering, dissatisfaction and inability, and this with almost every thought and with every action. This fundamental error of human understanding, according to Patanjali, is that consciousness and the pure awareness are considered to be the same thing, while actually they are separate. This means we tend to believe that we are our thoughts, we are our body, we are our emotions, but in essence we are not. Our thoughts, body and emotions are sometimes like this and

sometimes like that and we identify with them, but this is wrong. They are part of us, but if we think this is what we are, we let them dominate us. A misidentification with one thought or one emotion, that becomes overwhelming, can lead us into great trouble. Usually, we don't recognize when we switch with our identification between body, mind and heart and don't recognize their separate nature. And while we are busy with these misidentifications we miss our essence, the spirit, our soul. Mostly we are busy with thoughts, thoughts about the future or thoughts about the past. We don't know where they come from, following them we get lost somewhere and don't know how or why we came there and we cannot stop thinking. The process that shall lead to meditation is meant to stop the thoughts. When there are no thoughts, that is meditation. When there are no thoughts "consciousness becomes jewel-like, reflective enough to help awareness overcome this case of mistaken identity and recognize its true nature. This, and not our compulsive quest for gratification from external experience, is the source of the most profound happiness and wisdom" (Hartranft, 2003, p. 1). Because then we gradually come closer to our true nature, our soul¹⁷⁸.

In the Yoga sutras Patanjali speaks of the "eight-fold path", the eight key concepts to reach the state of silent mind meditation. The "eight-folded" or "eight-limbed" path includes different rules of conduct (Yama and Niyama), e.g., self-discipline, purity, non-violence, truthfulness, and the restraint of all kinds of desires. Then there are physical exercises that help to prepare the body and to silence the mind. They are yoga postures (Asanas¹⁷⁹) and practices of controlled breathing (Pranayama¹⁸⁰). In addition, Patanjali said one should move away from the impressions of the everyday world (Pratyahara¹⁸¹) - ideally live as a hermit in a small community to steady the mind (Dharana¹⁸²) and to contemplate

¹⁷⁸ Turning the attention from the outside world to the inner world of thoughts and emotions can be a sort of new awareness for some individuals that need to be handled with care. Responsible psychological clinical studies are cautious with the selection of testants and mentally weak people are not taken. (Vahia, 1972, p. 64).

¹⁷⁹ In Patanjali's time the yoga posture (asana) was to sit still in an effortless way (Hartranft, 2003, p. 2).

¹⁸⁰ "Pranayama, the voluntary control of breathing. The breathing is divided into four components: - (1) inspiration, (2) expiration, (3) retention of breath, and (4) keeping the lungs free from both" (Vahia, 1972, p. 62-63).

¹⁸¹ "Pratyahara primarily consisted of emancipation from external influences" (Vahia, 1972, p. 63).

¹⁸² An example of a simplified Dharana exercise from a clinical study: "The patient was advised to put all his mental efforts to keep his mind free from all distractions and concentrate on an object or

mindless (Dhyana). The goal of Patanjali's yoga path was complete bliss and peace through a silent mind (Samadhi).

But "the yoga of Patanjali is more a program for developing this capacity than it is a state to be reached" (Hartranft, 2003, p. 2). The process leads to self-determination, self-confidence, and a stable personality. It leads to satisfaction, joy and inner peace. Following the Patanjali Yoga Sutras meant a dedication of one's life to this one goal, of finding oneself and one's own true nature. There were only a very limited number of teachers (Gurus) and they only accepted one or only a few disciples. They left their families to do this. They lived together in ashram (community life) a bit away from villages or cities.

Following the Patanjali Yoga Sutras is a difficult task and means a lifelong dedication. It is too time consuming and involves a renunciation for the sake of practice. It is actually not compatible with a modern life, with work, family or social responsibilities. Therefore, today other ways of attaining thoughtless awareness have been worked out. The most prominent is Sahaja Yoga Meditation.

2.4 Sahaja Yoga Meditation: The Intervention given for the Experimental Group in the present study

Sahaja Yoga Meditation is a condensed way of the classical yoga approaches. It includes and highlights the aim for thoughtless awareness, which is the main goal of Patanjali Yoga, because in this state beyond thoughts the gradual process of introspection and development starts. Small periods of thoughtlessness can be reached in SYM even at beginner stages; while in traditional practices the state of yoga is the final goal, which can be reached only after a complete dedication and alignment of the life style. SYM focuses on meditation and has Hatha Yoga or pranayama components only at the periphery. It recommends for a minimum of 10 minutes of daily meditation. Nirmala Srivastava

symbol most appealing to him-mostly a visual imagery. [This was difficult] until a stage was reached when concentration became effortless-the stage of Dhyana." (Vahia, 1972, p. 63)

developed this method to connect with the silence within in an effortless way to make it possible for normal people to benefit from the catalytic effects of meditation and yoga.

Nirmala Srivastava was born on the 21.03.1923, in a Christian family in Chhindawara, India. Her parents were from a higher-class family. They gave away their wealth and joined the Independence movement. As a child, Nirmala frequently spent some time with Gandhi in his Ashram. She studied medicine unsettled, because of her involvement in the Indian Independence movement. She married, had children. Her husband was a diplomat. In 1970, she began to talk about meditation in the public, after she had found a way to give en mass realization. In India she had a small group of people regularly coming to her for meditation and organizing public talks. Soon, the group became larger and started local meditation classes. Then, she moved to London, in 1974, as her husband got transferred to London as Secretary General of the UN International Maritime Organization. Being in London, also a small group of meditators found together. From 1977 to 1983, she spoke about yoga, meditation and the Eastern knowledge almost one hundred times in Caxton Hall, London¹⁸³. The group of meditators grew in England and also in India. In the 1980s she started to travel and give public lectures about the benefits of meditation first in Europe, USA, and Australia and in the 1990s also in the eastern European countries, South America, and Asia. The public talks were given free of cost. In the aftermath of her talks, in many places started meditation groups to meditate according to the Sahaja Yoga Meditation way. It seems important to mention, as this is quite uncommon, that the public lectures and the courses were and are always free of cost, they are sponsored by volunteers and in the beginning many times by Shri Mataji Nirmala Devi herself. Sometimes donations for space rental are considered welcome. There is hardly any "merchandise" material for sale. The organizational structure in many countries consists of charitable non-profit associations or trusts.

“In Sahaja yoga meditation, simple applications of silent affirmations and breathing techniques assist an individual to achieve a state of mental silence in which the entire attention is on the present moment, and one is free from unnecessary mental activity. The

¹⁸³ <https://shrimataji.org/a-town-hall-for-the-world/>

experience is often described by its practitioners as soothing, relaxing, and enjoyable” (Chung *et al.*, 2012, p. 589-590; Manocha, 2011).

Between two thoughts, there is a gap. To find this gap can happen spontaneous and in a childlike exploring manner. “Sahaja”¹⁸⁴ means “born with” as well as “spontaneous”. The ability to find the balance between thoughts from the past and thoughts into the future and to find short periods of silence within these two thoughts is given to everyone. To maintain the state of a silent mind for longer needs long time of disciplined practice but again can be reached effortless¹⁸⁵ and spontaneous. Sahaja Yoga Meditation apart from some small regularly repeated parts, *e.g.*, at the beginning and at the end of the meditation where there is a short bodily exercise with the hands and arms, has a large portion of free structures and intuitively chosen possibilities to reach the meditative state.

"Sahaja Yoga is a method of meditation that transforms and synergizes the meditator's inner dimensions to become moral, united, integrated and a balanced human being that leads to a state of silence and mental peace" (Rathor *et.al.*, 2020, p. 811).

It was chosen as a meditation intervention because it is the best known and most widely used method of thoughtless meditation, which can be viewed as a modern variant of traditional yoga and meditation. It is easy to learn and shows results quickly. It is common all over the world. It is not tied to a specific culture or religion; it is based on universal values. So, it shall provide no problem in India with its mix of many cultures¹⁸⁶. No special

¹⁸⁴ The word Sahaja is also well known in India. “SAHAJA is an Indian ideal of mental and spiritual health that has received special emphasis in the Sikh scriptures-especially, the Adi Granth” (Neki, 1975; Pirta, 2013, p. 145), it is also used as “a person who follows the natural laws” leads a “sahaj way of life” (Pirta, 2013, p. 150).

¹⁸⁵ “If you are not thoughtless, at that time you have to just watch your thoughts, but do not get involved into them. You will find gradually, as when the sun rises, darkness goes away, and the sun’s rays go into every part and make the whole place enlightened. In the same way, your being will be completely enlightened. But if you put in an effort at that time or try to stop something within you, it will not happen. Effortlessness is the only way into meditation, but you should not be lethargic about it. You should be alert and watch it” Shri Mataji Nirmala Devi, 01.01.1980, London. Retrieved from <https://shrimataji.org/effortless-meditation/>.

¹⁸⁶ In India there are many cultures, the main ones are followers of Hindu, Muslim and Christian religion, whereas Hindu is the most common.

clothing or other equipment is needed. It is exercised without any financial interest. The course leaders are experienced in meditation, but do not practice it as a profession. In the experiment the trainers were mostly the regular school-teachers at that school. All courses are free of charge; A maximum contribution towards expenses for renting the room on a donation basis can be requested. Therefore, there are also no costs charged for running the experiment in the schools. In most countries, the form of organization is as a non-profit or charitable association. Sahaja Yoga attaches great importance to the practical meditation experience, mostly theoretical explanations are short and directly connected to the practical implementation. Which makes it also suitable for school children. It can be easily integrated into everyday life, as a short meditation of around 10 minutes per day is considered sufficient. In schools, the 45-minute daily courses often took place before school started. So that the regular school teaching process was not affected by the intervention. Sahaja Yoga Meditation is acknowledged partner of the UNESCO center for peace and is not known for scandals. The leader Shri Mataji Nirmala Devi enjoyed a high reputation in many countries around the world, which can be seen from the many honorary doctorates she was awarded and other recognitions from various cities and organizations. With this reputation, one can be sure that by choosing Sahaja Yoga Meditation as an intervention one will not bring any strange guru sect into the schools.

Apart from these practical considerations, the research on SYM appears to show a promising range of effects that also correspond to the characteristics of a general personality development cited in traditional yoga and meditation scriptures.

2.4.1 Research on the effects of Sahaja Yoga Meditation

2.4.1.1 Effects of Sahaja Yoga Meditation: Physiological and medical effects on brain, nervous system and body functions

Elkhonon Goldberg found¹⁸⁷ “analogies between the evolution of the brain and the development of complex societal structures” (Goldberg, 2009, p. 5). He explains the importance of the frontal lobes of the brain as for what “is your mind, your core, yourself” and that they “play a critical role in the success or failure of any human endeavor”. It is the brains (and interactional of neocortex) condition that determines talent, success, and leadership qualities. Today “few educated people [...] doubt, that language, movement perception and memory somehow reside in the brain”, while “ambition, drive, foresight, insight – those attributes that define one’s personality and essence – are viewed by many as “extra cranial”, as if they were attributes of our clothes and not our biology”, states Goldberg (*ibid*, p. 4). A good functioning frontal lobe system is important for motivation, drive, and vision, while a less developed or damaged can lead to apathy, inertia and indifference. A well-developed frontal lobe system is important for self-awareness and awareness of others, social maturity, and social responsibility. “Poor development of or damage to the frontal lobes may produce behavior devoid of social constraints and sense of responsibility” (*ibid*, p.5).

Neuroscience research showed the stimulation of brain aeriels through meditation, e.g., Mindfulness (Hölzel *et.al.*, 2011). But Sergio Hernandez *et al.*, found in cross sectional studies¹⁸⁸ an increase of 7% grey matter volume in the whole brain for long time Sahaja Yoga Meditation practitioner compared to a healthy, similar control group (Hernandez et al. 2016, 2020). This effect seems remarkable considering that the brain loses in average 0,15% - 0,3% of gray matter per year and under circumstances small differences of gray matter may go together with a decrease of cognitive functions¹⁸⁹. According to the knowledge of the researcher, this is the largest grey matter difference published so far. In other studies (with different meditation techniques) grey matter changes were found only in some small brain areas; those changes never implied a difference in the whole brain.

¹⁸⁷ Goldberg’s research is not connected to Sahaja Yoga Meditation. It is referring to the general importance and the role of the brain. It is put here to introduce some of the physiological and medical aspects related to Meditation.

¹⁸⁸ Cross sectional means to compare grey matter between two groups with everything similar except the variable to be controlled, in this case one group meditated (SYM) the other not.

¹⁸⁹ The effect of loss of grey matter and decrease in cognitive functions can be adrumbated, when looking at "aging diseases" such as Alzheimer's, senile dementia or Parkinson's where the loss of grey matter and a decrease in cognitive functions is symptomatic and rapid.

For example, Hölzel et al. found in longitudinal research¹⁹⁰ about Mindfulness Meditation a grey matter increases (only) at the left hippocampus (Hölzel *et al.*, 2011).

The state of silenced mind during Sahaja Yoga Meditation has been monitored by EEG (electroencephalography). The EEG showed a reduced complexity as well as a change into lower frequency regions (Aftanas *et al.*, 2001, 2002, 2003; Ray *et al.*, 1985; Molle, 1999). The patterns shown for Sahaja Yoga Meditation (silent mind) differ from the patterns found for Transcendental Meditation (TM, continuous repetition of a mantra), and Mindfulness Meditation (MM, observing of thoughts and emotions), indicating “a possible adverse effect” (Chung, 2012, p. 590) of the other technique’s TM and MM. EEGs for TM practice show higher complexity and inconsistent amplitude (Travis *et al.*, 1999, 2001; Istratov *et al.*, 1996; Knott *et al.*, 2001). Mindfulness Meditation showed an asymmetric activation (Davidson *et al.*, 2003), increased defensiveness (Bonanno, 1990), disproportional anger (Harmon-Jones, 1998) and new Meditators were more relaxed in resting position than in the two meditative conditions (Dunn *et al.*, 1999).

Certain regions of the brain have been identified to be correlated with specific brain functions. The functions carried out more often build a “better infrastructure” in the brain so that they are faster accessible and more developed than other. Structures not used, as the activity is not performed, are reduced by the brain. The lasting structural and functional connectivity can give information about the activities carried out often and about certain skills connected with that brain area. A neurological study by Barros-Loscertales *et al.*, comparing 23 Sahaja Yoga Meditation experts with a healthy control group, found for SYM stronger connection in the area related to attention and control, while the areas related to mind wandering were weaker, compared to the control group. Also, areas related to self-control were stronger and impulsiveness related areas were weaker in SYM experts, compared to the healthy control group. (Barros-Loscertales *et al.*, 2021).

The sympathetic nervous system (SNS) mobilizes body systems (e.g., for fight and flight mechanisms), while the parasympathetic nervous system (PNS) conserves energy and

¹⁹⁰ Longitudinal research means grey matter is measured before and after the intervention, which was several weeks of meditation.

promotes housekeeping functions during rest. Meditation seems to relocate activities from the sympathetic to the parasympathetic nervous system. This was found out for SYM (Cahn & Polich, 2006; Rai *et al.*, 1988) as well as for other meditation types (Cahn & Polich, 2006; Jevning *et al.*, 1992; Solberg *et al.*, 2000b) and could be a characteristic of many meditation / yoga practices (Rubia, 2009, p. 2).

Sahaja Yoga Meditation was found to have positive effects on the (heart) cardiovascular system (Yalta *et al.*, 2011). It was suggested for complimentary therapy in the management of cardiovascular diseases, diabetes and stress related disorders (Gupta *et al.*, 2015), anxiety reduction, blood pressure control (Chung *et al.*, 2012), high blood pressure, essential hypertension and stress management (Rai, 1993), epilepsy (Panjwani, 2000), asthma (Manocha *et al.*, 2002), menopausal symptoms (Manocha *et al.*, 2007), better functional health compared to the general population in Australia (Manocha *et al.*, 2012). SYM affected significantly the Nutritional Assessment (Chaudhary, 2011).

2.4.1.2 Effects of Sahaja Yoga Meditation: Mental, Emotional Well-being and Academic.

Sahaja Yoga Meditation was regarded as an effective tool for stress reduction and support of mental health (Rai *et al.*, 2010; Manocha *et al.*, 2009), reduction of work stress and increase in occupational health (Manocha *et al.*, 2011), reduction of anxiety and depression (Sharma *et al.*, 2005), better capabilities to moderate the intensity of emotional arousal (Aftanas *et al.*, 2005), enhanced quality of life and wellbeing (Manocha *et al.*, 2012; Chung *et al.*, 2012), emotional stability (Cahn & Polich, 2006) and deprivation of drug consumption (Hackl, 1995).

Sahaja Yoga Meditation has shown significant improvements and better performances in students in relation to academics. An experimental study revealed that the SYM group has a significant improvement in their memory power (Rangan, Nagendra & Bhat, 2009). SYM was found to improve the dynamic balance ability of students (Rajak & Choudhary, 2016).

Studies in Australia found positive influence of SYM on ADHD children (Harrison *et al.*, 2003). Mental health and peace enhance physical and emotional harmony in and between individuals (Rubia, 2009).

Schneider *et al.*, found that Sahaja Yoga Meditation leads to more sustainable business decisions. Their experiments “focused on developing social consciousness in managers that would encourage SRB [socially responsible behavior] in their day-to-day decision-making” (Schneider *et al.*, 2010, p. 36). They found significant effects of SYM on the “three domains of social consciousness (cognition, affect and values)” (Schneider *et al.*, 2010, p. 33).

Tommy Hendriks and his colleagues found the endorsement of seven signature strengths through SYM. They included forgiveness, gratitude, self-regulation, and teamwork which are important qualities for the job world (Hendriks *et al.*, 2021).

2.5 Yogic Meditation and Social Responsibility

Sometimes the growing meditation and yoga approval in the US is considered to foster ego-centric tendencies. The argumentation there is that yoga and meditation require and lead to a certain level of self-centeredness (Bellah *et al.*, 1985). In America there is an alarming growing tendency towards a morally and socially inadequate ideology observed (Kipnis, 1994; Bellah, 1985). Individuals live more and more in their own social reality; decoupled from large parts of the society and central values. Such an ego-centric world view (“ontological individualism”, Bellah *et al.*, 1985¹⁹¹) leads to conflicts between the individual and the society. Bellah *et al.*, regard this ontological individualism as a possible sign of a growing disintegration within the society.

But it might as well be that the tendency towards more ego-centeredness in the American society is a phenomenon by itself that is not correlated nor fostered by a growing interest

¹⁹¹ Bellah *et al.*, examine American middle-class values in their work “Habits of the Heart”. They diagnose an ideology of “ontological individualism” that Americans follow. In the article “Yogic Meditation and Social Responsibility”.

in meditation practices. Indeed Andrew B. Kipnis¹⁹² found evidence, that quite the opposite might be the case and yoga and meditation may lead to a more peaceful and respectful society. He sees the “labeling of inner-awareness (approaches) as asocial and apolitical in general” as not fact based (Kipnis, 1994, p. 111) and disproves Belah et al. arguments. Kipnis took part in a yoga course himself and interviewed the other students. He found that through yoga and introspection the social responsibility and ability of the students improved. One student told:

“We're so used to storing up emotions inside of us that sometimes we don't even realize what we're feeling. When I practice yoga, what release means to me is, is when you let those feelings out again, and that alone helps you feel less tense, but more importantly it lets you know what they were in the first place and then maybe you can figure out why you felt that way. It seems as though every time I practice, I have some sort of revelation, about something I feel about some small thing that's gone on the day before, or something that's been ongoing in my family” (Kipnis 1994, p. 119).

Through introspection and self-knowledge, there is moral values like honesty and responsibility are fostered. The self-responsibility that is strengthened leads to an internalization of this value and what is inside is emitted to the outer social world, so that more responsibility is felt and taken for the family and larger parts of the society.

Kipnis found a social logic immanent to yoga that consisted of four aspects. First the metaphor of harmony that starts with the harmony of the own body, mind and spirit and later naturally expands to socioeconomic interdependencies. Secondly the caring for oneself that starts expanding on the feeling of responsibility to care for others. Third the discipline needed to do yoga teaches to reach goals with constant and slow progress; this is also the qualities needed for personal and societal achievements. Fourth he found yoga was used for social reflection, social and moral reasoning and the socially constructed self.

¹⁹² Andrew B. Kipnis is today the chairperson of the Department of Anthropology of the Chinese University of Hong Kong.

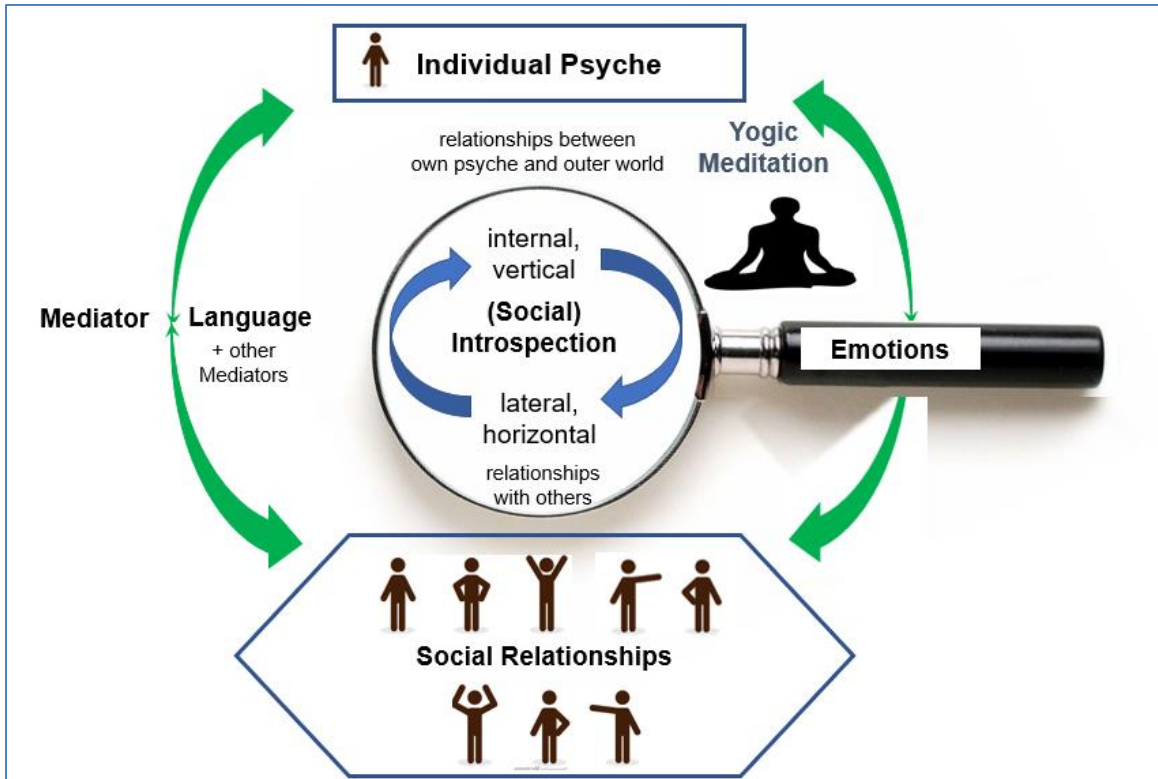


Figure 15: Socially Constructed self and the influence of yogic meditation; derived from Kipnis 1994
(Figure: by Researcher)

Figure 15 illustrates the interdependencies between socially constructed self and yogic meditation, it was conceptualized after the text of Kipnis (1994). Language was seen the most important mediator between the Individual Psyche and Social Relationships (Habermas, 1971; Morris, 1994).

“What Caryl Emmerson [...] says of Bakhtin's view of language can also be said of emotion, namely that in speech people simultaneously form lateral ('horizontal') relationships with other individuals in specific speech acts, and internal ('vertical') relationships between the outer world and his own psyche. These activities are constant, and their interactions in fact constitute the psyche.” (Kipnis, 1994, p. 123).

Therefore, language and emotions can be seen as the mediators between the socially constructed self and the social relationships in the society. But the relationship between the individuum and the society is determined by the psyche of the individuum Yogic

Meditation is a vehicle for introspection, it works through emotions. The introspection works like a cleansing and vitalizing of inner ideals and values. The internal introspection entails a lateral introspection of the relationship towards others. Like another student told to Kipnis:

“It seems to me that people who practice yoga are more concerned with human things, with unfortunate people and the world situation, with people and how they behave and relate to other people. Yoga is about the interrelations within the self, and these naturally extend to those between yourself and others. [...] The people I talk with who practice yoga experience a change in attitude. I do not think you can do it like jogging and not be changing a lot. You cannot just practice yoga and not question the way you live” (Kipnis, 1994, p. 120).

As Yoga and Meditation is character building towards a more caring and responsible personality it can be useful tool for sustainable education. But it must be carefully handled, as there are hundreds of techniques and thousands of different trainers with different (personal) qualifications and qualities. Steven C. Rockefeller¹⁹³ sees the practice of meditation in academic classes as “a delicate issue in a secular university or college for the fear is always there that a religion department professor may cross the line and get into religious indoctrination or begin to play the role of a guru with students. However, as long as that is not the case and as long as the person teaching a meditative practice has the training to do so, the exercises in meditation are introductory in nature, and substantial academic study forms the core of the course, such practical introductions to meditation will probably be accepted. They should be viewed as quite appropriate, for the simple reason that it is very difficult to understand and appreciate the nature of an activity which one has never directly experienced” (Rockefeller, 2006, p. 1782). Off course the “apology of experience” may be considered as sectarian thinking or structural storytelling in this context. But meditation is an experience-based process and the experience is very personal. You cannot know the joy of playing an instrument or of singing just by listening

¹⁹³ Steven C. Rockefeller is Professor of Religion at Middlebury College, Vermont, member of the Earth Charter Commission, chairman of the Rockefeller Brothers Fund (NY), and trustee of the Asian Cultural Council.

to the music, or you cannot undergo the positive feelings that people get when doing sports, by watching it.

This seems to be a general and structural problem in meditation research. Most people involved in meditation research (seem to) have experience with only one or only a limited number of meditation practices, some even don't (seem to) have an experience with any kind of meditation. We have seen in the subchapter about adverse effects, that caution is also advisable and one does not need firsthand experience of everything. But a general deeper knowledge of practice (cause) and effect as well as second-hand personal knowledge about the different techniques would be fruitful for research endeavors. Also, the different categorization approaches seemed for the author to lack of traditional meditation background, that's why after introducing the main approaches another classification approach with reference to traditional meditation was developed.

2.6 Categorization of Meditation

Meditation and Yoga are many a times used as umbrella terms under which quite different techniques and practices are subsumed. In the public and the scientific discourse, it seems to be an a quite vague understanding about yoga and meditation, in regard to its practices and effects. Many times, the titles of scientific literature use yoga and meditation¹⁹⁴ exchangeable and do not state the practice observed. Sometimes, even in the works it remains unclear which practice was observed, or various practices were observed without clear discrimination of the practices. In the public discourse even more confusion about different practices can be found, whereby many times it is unknown to the confused that there is a state of confusion.

¹⁹⁴ Admittably in this work also yoga and meditation are used in a way exchangeable, to promote readability and to make it possible for readers to dock with their (estimated by the author) preexisting knowledge and language to the (estimated) new context. Hopefully at the end of this chapter the terms yoga and meditation will be clearer to those it was not already before. The state of yoga and the state of meditation are more or less the same, so mixing them is no problem, but most of the time they are referred to as practices (and not as a state) in the discourse and there are huge differences between (all) the practices. Most of the times in the discourse yoga refers to the hatha yoga practice, which is the performance of body postures and not what yoga originally means – a state which is achievable in meditation.

The following classifications and structuring approaches were found in scientific literature as classification types. The writer of this thesis developed an additional new classification approach at the end of the subchapter, which seemed to be missing but important to make.

2.6.1 Classifications according to the states of attention: Mindfulness vs. Concentrative as well as Open Monitoring (OM) vs. Focused Attention (FA) Meditations

Some research classifies meditation types according to their states of attention in a two-pole spectrum (Andresen, 2000; Shapiro & Walsh, 1984; Wallace, 1999). There are basically two approaches.

One approach spans the bandwidth between Mindfulness and Concentrative to classify different forms of meditation. One side of the spectrum is called mindfulness. Meditation types where the mind is full of thoughts and feelings which the individual tries to observe from a neutral perspective, should be placed on this side. At the other side of the spectrum are concentrative forms, where the attention is focused on a sound (e.g., by sound bowls) or the breath (pranayama) or mental pictures.

Mindfulness type of meditations are for example Zen, Vipassana, and MBSR¹⁹⁵ (Kabat-Zinn, 2003). While Buddhist Samatha meditation focus on the sensation of breath would therefore be considered a concentrative form.

The two-pole category does not fit to every type of meditation. For some meditation techniques it is rather difficult to position them inside the two-pole spectrum.

Already the 'popular' technique of Transcendental Meditation (TM) does not really fit into these categories. "TM fits somewhat within the concentrative forms, because practice

¹⁹⁵ Mindfulness Based Stress Reduction (see chapter 2.2.2)

centers on the repetition of a mantra, *but* the method places a primary emphasis on absence of concentrative effort and the development of a witnessing, thought-free ‘transcendental awareness’ (Cahn et al., 2006, p. 180). So, this type of meditation would be placed at the concentrative side of the spectrum for the ‘outward action’ that is performed (mantra repetition) while the ‘inner attention’ actually denies concentration and emphasizes the neutral observation of thoughts and feelings which would place it exactly at the opposite side of the spectrum, the mindfulness side.

The meditation technique used as intervention in this experiment, “Sahaja Yoga emphasizes adopting the witness posture toward thoughts instead of flowing with them during meditation and is, therefore, very close to the mindfulness end of the meditational spectrum” (Cahn & Polich, 2006, p. 194). But it does not follow the thoughts or observes them with curiosity, as it is done in the mindfulness technique MBSR. And the main aim of SYM is to get the mind empty, not full. Therefore, according to the categorization as a mindfulness type of meditation, SYM would be in the same category with a practice that is not only completely different but even in parts contrary.

The Mindfulness-Concentrative two-pole spectrum may work for the classification of some practices, so for Buddhist types and especially for mindfulness meditation types, but for many other meditation types these two categories just do not picture their core activity or aim.

The other two-pole classification scheme consist of the “Focused Attention” on one side of the spectrum and of “Open Monitoring” on the other side. These constructs are developed around the term “attention” but their construction is rather similar to the mindfulness-concentrative-two-pole-scale. The concentrative spectrum is called “Focused Attention” (FA) while the mindfulness spectrum is called “Open Monitoring” (OM) where thoughts and emotions or other sensations are observed. Again, these two spectrums have a problem of clear classification of meditation types. For example, pranayama breathing exercises would also here fit into the two categories at the same time. Pranayama has a *focused attention* on the breathing while at the same time the breathing sensations are neutrally observed, which would speak for the “Open Monitoring” side of the spectrum. Also, for the Transcendental Meditation Travis and Shear see the difficulty

of placing it in the FA vs. OM spectrum. To solve this problem, they suggest to invent a special category for TM (Travis & Shear, 2010).

The problem of both two-pole approaches seems to be that the bandwidth of meditation methods varies too much to be covered by two poles of rather one dimension, which in both approaches is “attention” which is allowed either to be focused / concentrated or to observe a full mind by open monitoring thoughts and emotions. An empty mind¹⁹⁶, which is the traditional aim of and which actually is yoga or meditation is not considered or represented in these two approaches.

2.6.2 Classification according to the state and trait effects

Another classification approach concentrates only on the outcomes, the shown effects. It does not look at the attention of the mind, the aim of the method nor at the action that is done. It is purely interested in what can be considered to be the effect of a meditation practice directly during or shortly after the meditation and what are the effects when that type of meditation is practiced regularly over a long period of time.

The effects of meditation practices do vary in the short-term (state) effects. They also differ in their trait effects as different character changes are abilities can occur through regular meditation over a longer period of time.

The short-term effects of a meditation practices are not necessarily the same as the long-term effects. Mostly they are characterized by some kind of relaxation or well-being aspects, which occur during and shortly after meditation.

“State changes from the meditative and religious traditions are reported to include a deep sense of calm peacefulness, a cessation or slowing of the mind’s internal

¹⁹⁶ An empty mind shall not be confused with a dumb mind, which is not functioning good or which is rather slow. An empty mind or thoughtless state does not refer to how thoughts are processed but is rather beyond thoughts.

dialogue, and experiences of perceptual clarity and conscious awareness merging completely with the object of meditation, regardless of whether a mantra, image, or the whole of phenomenal experience is the focal point" (Cahn *et al.*, 2006, p. 181).

Special "peak experiences" can occur (*e.g.*, Samadhi, nirvana, oneness) in meditative states (Forman, 1990; Goleman, 1996; Mahesh Yogi, 1963; Wilber, 1977)¹⁹⁷.

"Trait changes from long-term meditation include a deepened sense of calmness, increased sense of comfort, heightened awareness of the sensory field, and a shift in the relationship to thoughts, feelings, and experience of self" (Cahn *et al.*, 2006, p. 181).

Trait changes can be character changes that correspond to the immediate experience, for example a person can feel relaxed or positively activated during meditation and become a more relaxed, confident or active character after prolonged regular meditation. There can also be long-term changes in skills. Certain interests can also develop, such as an interest in science or music, that were not there before.

Most of the exercises should appear comfortable to the practitioner during the meditation or immediately after the meditation, because if this were not the case, he / she would not continue doing it by free will¹⁹⁸. Still, we have seen adverse effects (chapter 2.2.3) that mean serious troubles for the practitioner and almost for sure he was not aware of these potential troubles while doing it. These negative long-term effects were not evident in all participants, which suggests that there may be a certain form of personal suitability or better compatibility with one or the other form of meditation. While on the other hand there seems to be such a thing as a general pattern of problems that can occur and how serious these problems can get in connection to special types of meditation, which can be seen in the frequency and intensity of the problems.

¹⁹⁷ Although such "peak-experiences" are not limited to meditation practices, as they can occur spontaneously and unintentionally (Maslow, 1964). Read more about "peak-experiences" in chapter 2.1.2.

¹⁹⁸ As long as no other external condition would prevent a stop, for example group or psychological pressure to continue with the practice, even if it is not perceived as nice. Or the narrative that it has to get worse first before it gets really good.

In this regard a close look at the possible positive and negative long-term effects of the different meditation types seems to be a good and necessary measure to assess and differentiate the different methods. From this, one can derive a risk-benefit assessment or simply create a ranking of preference. What this categorization lacks, is a root cause analysis. Is it due to the personality of the individual or is it a structural strength / weakness of the form of meditation? What in this method causes this or that effect? And finally, one could argue that the effects shown may not only be achievable through meditation, but could also be achieved in other ways. Therefore, it would be advisable to look additionally at the intensity of the effects or the deepness of the experience.

2.6.3 Classification according to deepness of the experience

According to the deepness of the experience Rockefeller categorizes the variety of meditative and contemplative disciplines into three classes:

1. “Basic forms that involve techniques of concentration that bring calm and clarity to the body-mind.
2. More advanced contemplative forms are designed to help a person to move beyond a narrow atomistic sense of self and to develop a sense of identifying with others and belonging to the larger community of being.
3. Transformative spiritual disciplines that can ready a person for the experience of enlightenment or union with God”, when they achieve “a transcendence of ego-centered awareness, it deepens consciousness of the sacred.” (Rockefeller, 2006, p. 1777).

Rockefeller is Professor of religion and at the same time teaches Buddhist meditation practices in the mostly Christian USA. He knows about the delicacy of the spiritual aspects of meditation and about the fear of indoctrination or the fear of attempts of conversion to an Eastern belief system by large parts of the American Christian society. He regards meditation as a “contemplative experience” with the “potential to experience directly the mystery, wonder and beauty of the world” (Rockefeller, 2006, p. 1779) which is not

connected exclusively to one religious belief system. Meditation is a practice or a method, a religious belief system is something else. According to the aim of the individual a method would be suitable that does affect only the concentration level (stage 1), if he wants to grow over the “I” perspective to a “We” perspective and he wants to achieve this by meditation, he will have to choose more evolved practices. If the individual is more interested in religious or spiritual aspects, there are techniques that can even provide access to a feeling for one's own divinity or spirituality. An awareness of the sacred is beneficial for people of all religions, if they want to develop religiously and spiritually. The methods are not per se religion-specific or exclusively accessible to followers of a certain belief system, but the suitability rather depends on the individual. Which “kind of practice that is appropriate for any one individual will depend on what stage in the human life cycle the person is at and on his or her special needs and abilities” (Rockefeller, 2006, p. 1777).

People who consider spirituality as a too great demand on a method or are not interested in it, or consider it dangerous for their believe system, might be perfectly fine with concentration exercises of a stage 1 ‘meditation’ method and might be happy if they think that they can think more effectively afterwards.

This type of classification according to depth of experience is highly dependent on the individual, it's experience and its ability to judge correctly, be it as a practioner or as a researcher using this classification (but this is the case for all the classifications discussed before). Also, it is a one-dimensional classification which will find many different techniques in the same classification category; therefore, it may be not so useful to distinguish different meditation and yoga practices from each other. The value of this classification scheme is, that it turns our attention on the outcomes of the techniques and reminds us what is achievable and desirable.

2.6.4 Classification according to the dimension's activation and amount of body orientation

Karin Matko and Peter Sedlmeier were searching for a more sophisticated classification system that considers more than one-dimension. They empirically derived a classification

system along the two dimensions ‘activation’ and ‘amount of body orientation’. Therefore, they reduced 309 initially identified techniques to the “20 most popular ones” (Matko & Sedlmeier, 2019, p. 1) and asked 100 experienced meditators to rate the selected 20 techniques.

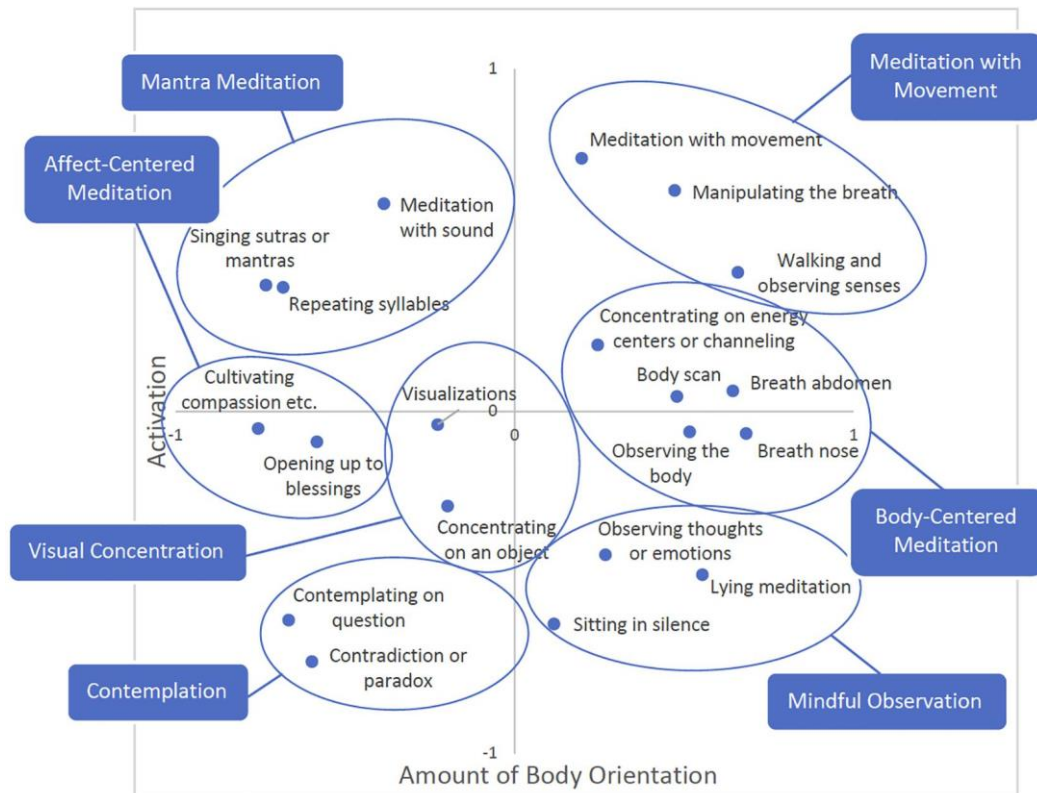


Figure 16: Classification of meditation types along the dimensions Activation and Body Orientation with clusters and labels (source: Matko & Sedlmeier, 2019).

They found seven clusters (shown in figure 16) that might exert diverse effects and call “the common division into ‘focused attention’ and ‘open monitoring’ into question” as this division was not found in their study (Matko & Sedlmeier, 2019, p. 11).

The Matko / Sedlmeier approach includes somehow the activity dimension, and it introduced a bodily dimension, but for the writer of this thesis, it misses the aim or the intention behind the meditation. The authors point out that there were differences visible in the ratings of participant with a Hindu meditation background and a Buddhist meditation

background. A point of critique is that they “chose to take out meditation techniques of their traditional context” as “this might help to effectively disentangle genuine effects of simple meditation techniques from the effects of their traditional context” (*ibid*, p.12). We understand Matko/ Sedlmeier’s “traditional context” as “spiritual context” or “the aim to reach a specific state”. Which cannot be put aside, nor be ignored just for the reputed claim of being more objective and scientific. As most of the “meditation” techniques claim to have an effect also on the mind (e.g., relaxation, stress-relief) the mind must be involved at least as much as that it knows the techniques aims, the procedure of the proposed technique or at least the subject should have a desire to experience something. The techniques are a vehicle to intentionally and repeatedly be able to reach a certain state of mind. Just by pure luck or blessing one might get spontaneously into that state of mind without any of these techniques (e.g., Maslow's “peak experiences”¹⁹⁹), but one will not know what it is, what to do with it and how to reproduce it. A Sufi-dance carried out without the intention of meditation, will remain a similar experience than a Viennese waltz or a child that is turning and turning around and getting dizzy afterwards. The “tradition” behind every meditation practice is a spiritual tradition and the wish to reach the ultimate, the yoga, the union. The traditions and rituals are very important in many yoga and meditation practices, even in the Christian mysticism tradition. Hence, they are a real issue in religious sociology.

Even for Hatha Yoga “physical movements and spiritual accounts constitute one another in the practice of yoga, thus opening up a pathway into a different reality; movement and spiritual discourse inform one another—and it is precisely in this reflexivity that “transcendent experiences” are created and yoga is made meaningful and important” (Griera, 2017, p. 77).

2.6.5 Classification according to the “activity” and aim pursued

¹⁹⁹ Extraordinary experiences, that invoke a joyful feeling that life is worthwhile or meaningful. (read more at chapter 2.1.2)

From the writer of this thesis' point of view the prior discourse approaches the analysis of this complex phenomenon in an incomplete and approximate way. The basic common sense should allow us to tell (and research shows) that result differ e.g., when some techniques focus on physical aspects, while others on mental aspects. Matko's and Sedlmeier's approach go in the right direction. However, we derived from traditional meditation / yoga teachings another approach of classification according to the activity pursued and the aim behind. This is derived (in contrast to Matko / Sedlmeiers approach not empirically, but) from classic Hindu teachings and literature.

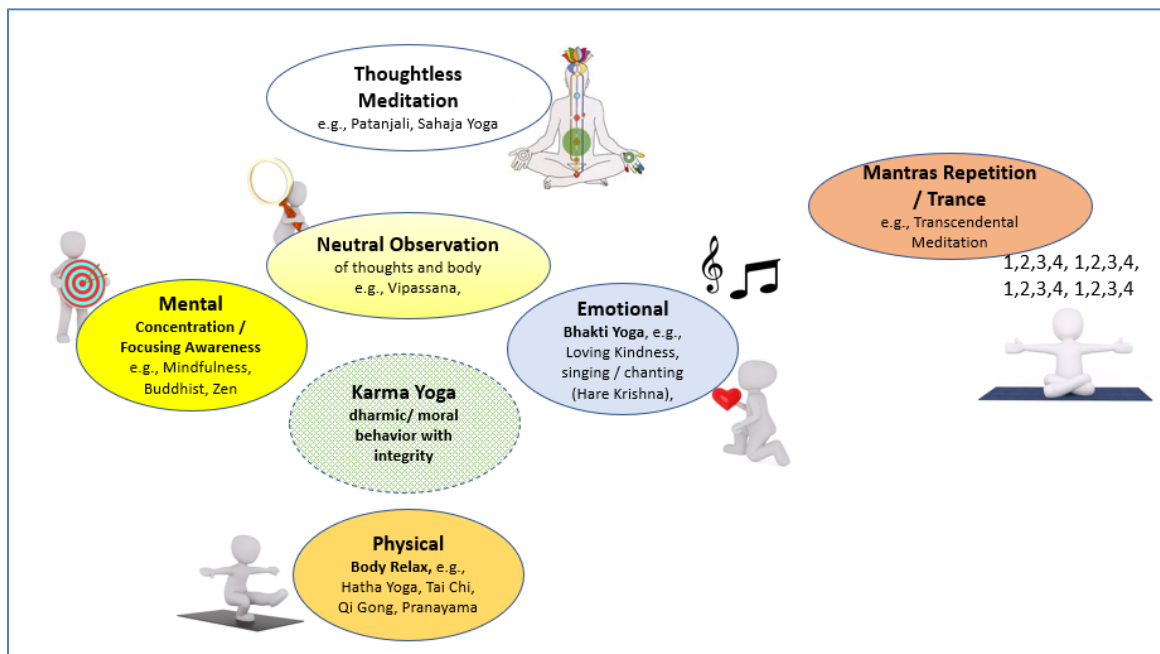


Figure 17: Classification of meditation types depending to main activity pursued deprived from traditional yoga literature (by the writer of this thesis)

The figure 17 visualizes traditional Hindu distinctions between activities connected to meditation. These activities fulfill different purposes or touch certain aspects of the being. Today there are some “meditation” techniques that focus on one or more separate aspects. Figure 17 also names prominent “meditation” techniques without an all-encompassing claim, which are known today as examples.

The Hindu tradition distinguishes between body, mind and emotions that all have to be well prepared and worked on to reach the state of yoga or meditation.

The physical body is the temple that is to be looked after. Balanced diets (e.g., in Ayurveda), tailored to the needs of the individual with certain pre-dispositions, help to regulate the biochemical household of the body. Body postures like Hatha Yoga, Tai Chi or Qigong²⁰⁰ are meant to bring the physical system into a state where the nervous system is open and without blockages. The nervous system and the nervous plexuses are the bodily expressions of certain energy points known as Chakras and energy channels known as Nadis. There are two channels²⁰¹ or type of energies, they control or influence the mental and the emotional side of a person.

The emotional side is influenced by Bhakti Yoga, as described in the Bhagavad Gita as one of the possible yoga paths. Through Bhakti Yoga the individual expresses his complete love to God. In the Hare Krishna Movement, the Bhakti side is addressed through the singing and chanting of God's name (Hare Krishna) and other devotional songs. In a secular understanding this love to God can be interpreted and transformed into love for creation and nature. The Loving Kindness practice is a more secular Buddhist form that aims to develop love with increasing difficulty, from oneself to friends and family to people who are offensive or unpopular at first sight.

The mental side can be influenced by concentration and focusing exercises. Since the mind is often constantly tracking thoughts from the past and the future, the mind actually has no control over the situation, but is more reactive or indulged to thoughts that seem to appear out of nowhere (but come from the ego and the super-ego). To calm these thoughts is like taming wild horses. Focusing the mind is a start of reducing the thoughts and to gain some mastery about the thoughts. Buddhist meditations, especially Zen, use such techniques.

²⁰⁰ "Qigong is a distinct meditation technique that emphasizes becoming aware of the Qi or subtle energy in the body, and consciously manipulating it by means of intentionality, physical postures, and movements" (Cahn & Polich, 2006, p. 194; McCaffrey & Fowler, 2003). One form of Qigong is a concentration-based practice, and the other is more mindfulness based (Cahn & Polich, 2006, p. 187; Pan *et al.*, 1994)

²⁰¹ Moon-Channel (Ida Nadi) and Sun-Channel (Pingala Nadi), in Chinese Tradition known as Yin and Yang.

The neutral observation of thoughts, body and emotions is another vehicle to stop being carried away by any of these outbreaks and to gain mastery over them. By observing them from a meta-perspective one does not indulge into them, they can be left aside, and their occurrence will get less. Vipassana meditation aims to do that.

A silent mind and a thoughtless awareness are the final goals of yoga and meditation practices, according to ancient Indian Yoga treatise like Yoga Vasishta²⁰² and Patanjali's Yoga Sutras. This is the state yoga and the state of meditation. Today Sahaja Yoga Meditation is a prominent approach to thoughtless awareness.

One does not have to fear to get dumb by having no thoughts. The thought process is a great tool, e.g., for problem solving or to process environmental impressions. But many a times our thoughts seem to come from nowhere and lead into nowhere, or they go in circles – we are repeating the same thoughts over and over again, without coming to an end. This permanent thinking process can be exhausting, fruitless and sometimes we cannot even sleep, because of too many thoughts. Giving the mind a break of thoughts with at the same time full and clear awareness is relaxing and repowering for the mind. It also lets us tap into an awareness state that is beyond thoughts. It can be an experience similar to the “peak experiences” or “flow states” described by Maslow and Csikszentmihalyi (see chapter 2.1.2 and 2.1.3), with a feeling of great joy, meaningfulness or insight²⁰³. This state of meditation can also be experienced in many other ways, depending on the individual's personal state and the particular meditation situation; in fact, it is experienced differently each time. Many times, it goes together with the feeling that one is making a personal development, without knowing in which field. Later, sometimes days or weeks later, it can turn out that skills have improved, emotions have changed or some disturbance has gone away, or one is suddenly able to see problems from another angle, and intuitions and solutions can occur spontaneously.

²⁰² Yoga is used to calm the mind according to the ancient Indian saint Vasishtha. A whole chapter (5th) of the Yoga Vasishta is dedicate to the quieting of the mind (Upasama).

²⁰³ In contrast to the “peak experiences” and the “flow state”, where the occurrence cannot be brought about consciously, the meditation state can somehow be brought into appearance through the meditation practices. The meditation state is also not guaranteed, but it is much more likely to occur.

Karma Yoga is another way of attaining yoga, described in the Bhagavad Gita. It is practiced by always exhibiting good, morally integrity (dharmic) behavior – good thoughts, good words and good deeds (as it is described in Zoroastrianism). Therefore, it is not a real meditation practice but rather a life principle which is supportive for all meditation and yoga efforts.

Mantra recitation is a practice derived from the Rigveda's. Mantras are traditionally used in a religious content and can be understood as direct calls to God. The precondition for its functioning and adequateness of this method is an established connection – the yoga state. If it is used inadequately the scriptures indicate negative effects. Therefore, this method is put a bit aside as it is traditionally meant to be used after reaching the meditative state.

Nevertheless, there are claims of certain techniques to use this repetitive technique to get into meditation. Transcendental Meditation (TM) as the most prominent representative of this category uses syllables or words that are continuously repeated. Where they are derived from is not explained satisfactory. If the only use were to repeat any word to get through the monotonous repetition free of thoughts, one could also use any word or “meditation” or “yoga” to repeat. Research has shown some cases with serious negative side-effects of TM.

Other practices like *dream journeys* or *positive thoughts* can be experienced as relaxing, refreshing or giving the life another angle or perspective, but they would not be considered to be a form of meditation from a traditional point of view and therefor are not included.

2.7 Summary and Conclusions from Meditation Literature

Meditation techniques, like running, sleeping, or seeing, are designated forms of social behaviors. Therefore the techniques are socialized phenomenon, are real as such and they have a socio-cultural background²⁰⁴.

Meditation has two different meanings; it is a practice while at the same time it refers to a state. In the communicational discourse it is sometimes difficult for individuals to differentiate these two meanings. Which leads especially in cross-cultural human communication to a talk past each other in some extent. Therefore it is advisable to be aware of these differences in the discussion. Interestingly language theory, in the understanding of Emile Benveniste's theory of language and on Patrick Charaudeau's approaches, has a similar distinction, between things that are real in the sense that they can be thought, verbalized, and named, which would refer to the levels of the practices of meditation and the 'theory'. They can be named, designated and cognitively thought, even if only in sacred texts, for example. While for the state meditation there are aspects that cannot be named, because they go beyond the usual terminology, nor designated, because they go beyond our understanding nor can they be perceived by an outsider. Therefore, and still, they are reality.

So, we have to distinguish between the observable practices of yoga and meditation which are phenomena in a social context, they are the narrative, they are 'real', according to the terminology of language theory. And beyond this there is the actual state of yoga and meditation. It is, but it is unsure where it is, what it looks or feels like, what it does and what its actual nature is, it can be sought of like an unknown planet. But it is reachable and waits for curious discovery. Language theory places these aspects within the realm

²⁰⁴ In some regions of the world, current socio-cultural streaming may be more receptive to meditation, while in other regions meditation techniques are viewed with curiosity but with a more sceptical attitude.

of 'reality' or 'universal truth'²⁰⁵, which is interestingly the same wording the ancient scriptures of all cultures call these state.

Meditation exists as a socialized phenomenon, according to different cultures the preferences for certain techniques varies. In the secularized countries secularized techniques are more popular, while in non-secularized countries like India spiritual techniques are more popular. This is the realm of the real that relates to the aspects of the desirability of forms of mediation and to the perception and appreciation of these different techniques in different cultures.

But when we go beyond this area of the real, when we go to the reality of the effects of meditation, these are the universal truths of the state of meditation (or equivalent other states that are achieved by that particular technique). One type of meditation technique (real), if carried out in this culture or another culture, will give the same effects (reality) globally. Appreciation, understanding and interpretation are social phenomena, but the effects shown are reality, unbound of social context. Much like a pill with a drug has the same effect regardless of the country or social environment in which it is taken.

In the field of the real, the social phenomenon, there are different streams, methods, and practices in meditation. In public discourse, between cultures and of course within cultures, there are different ideas and understandings of meditation.

Meditation practices are found in the history of every high culture in the world. The oldest scriptures about meditation practices come from India. These scriptures stand in the beginning of the timeline of the written history of meditation, but at the same time they stand at the end of the timeline of a long tradition of only oral knowledge transfer that existed long before. The yoga and meditation techniques written down first (e.g., Patanjali Yoga Sutras) aimed to reach the meditation state as thoughtless awareness or, in the spiritual terminology, to achieve yoga, the union with the divine. As with any phenomenon of social representation, there has been an adoption, transformation, and change in techniques according to the values of the societies and groups that welcomed them.

²⁰⁵ Analog to the categories of Emil Beneviste (Marin, 2004, p. 229).

In the Eastern part of the world, meditation of yoga was and is still much more embedded into the general socio-cultural context. This may be because in the area of its origin it was evolved, widespread and appreciated in the Indian cultural context. Also, in ages of traveling by feet, horse or sailing ships the intercultural exchange was not so widespread as it is today. Intercultural contact was mostly the privilege of the trading or military professions. The popular perception of yoga in the West, from the 17th century onwards, derived from an early and elitist (bourgeois) fascination for the obscure and bizarre. The interest of larger parts of the Western society into the Indian culture and its teachings started in the 17th, 18th, and 19th century, through great national poets like Goethe, Blake or Wordsworth and the British colonization of India. "First hand" teachings on yoga and meditation and Indian philosophy were brought through the trips of Vivekananda and Tagore to the West at the turn of the 19th to the 20th centuries. It spread further with popular teachers like Alan Watts who thought and wrote about eastern philosophy, often in reference to the Buddhist and Zen tradition, between 1936 and 1973 in America. Sections of the Beatnik, Flower Power and 1968 generations have adopted such teachings, modified them and carried them into society. Later an interest and search for healthier life styles and stress relief fostered the fascination for yoga and meditation and their association as health- and well-being techniques.

The reality as the state of meditation or the state of yoga exists regardless of the social context. These kinds of states are not bound or limited to certain techniques, they can even appear suddenly and spontaneously without doing knowingly anything special. They are also not bound to certain cultural contexts. They were given different names in different cultures or different contexts. In the field of psychology similar states of reality are examined and described as real phenomenon in a similar way but with a different wording. For example, Maslow speaks of 'self-actualization', 'transcenders' and 'peak experiences'. Csikszentmihalyi speak of the state of 'flow' or the 'zone'.

Abraham Maslow's work focused on mental well-being and on higher developed personalities and what made them different from the rest. He called these people self-actualizers, as they seemed to develop their being to their almost full potential. They display much more morality, creativity, spontaneity, problem solving qualities, lack of

prejudice, and acceptance of facts, than the large majority of the population. What did those people do different than others? Maslow found that they had high levels of self-exploration and introspection. They maintained an awe for life and a positive joyful attitude. They also had more moments they experienced as meaningful to life and joy giving; these were perceived as peak-experiences and quasi spiritual moments of life. These experiences got more when they were accepted and appreciated as valuable gifts, while persons who disregarded them as by chance instances and displayed a completely rational or materialistic attitude to life had less and less of these peak-moments. The highest and most developed type of personalities, he found, transcended their own individual needs and sacrificed their own comfort and well-being for the service to others and to reach higher goals. Such personalities like Martin Luther King or Abraham Lincoln he called "Transcenders". The integration of self-improvement and a social zeal in life Maslow found supportive for the development of the self and for the good of society.

Mihaly Csikszentmihalyi is famous for his research of flow states that lead to self-development and expansion of the own possibilities. To get into the flow an activity must be perceived as challenging but somehow manageable. In the flow-states the individuals forget their feeling of time and experience every moment in the now. He found that happiness and the quality of life is not determined by or dependent on outside events, but on how they are interpreted; and the key to this is the ability to be aware of and to control inner experiences.

The works of Csikszentmihalyi and Maslow do describe states that are similar to the meditative state. Maslow's description of self-actualizers even has similarities to the characters that are described to be developed by long-term meditation in the ancient Indian scriptures. Both were aware of the similarities between their field of research and meditation, although they did not emphasize it too much.

Meditation and yoga are perceived as methods for self-improvement that foster introspection and the development of higher qualities. Many studies show positive effects on all sorts of well-being, depending on the method of yoga and meditation. The most popular methods in the West, also according to the number of academic publications, are Mindfulness, especially Mindfulness Based Stress Reduction (MBSR), and

Transcendental Meditation (TM). The MBSR technique is rather normed and uses Buddhist meditation elements combined with Hatha Yoga²⁰⁶ elements and integrates them into an eight-week program. The success of the MBSR program inspired many other eight-weeks Mindfulness programs in the market. TM is a technique that uses the repetition of words and syllables to bring the mind into an effortless, unfocused state of awareness. It somehow can be regarded as a mantra repetition practice, while mantras in contrast, in the yogic tradition, are used to address the Gods.

The large number of positive publications on both practices can be relativized by independent meta-analyzes that find the results of many research to be not as positive or significant as the single papers do. A Johns Hopkins University research review for example did not find evidence for any improvement of depression, anxiety, and pain or for mental-health related quality of life for TM while Mindfulness based programs did hold only moderate or low evidence on these parameters. Effects of both programs on positive mood, attention, substance use, eating, sleep, and weight were found to be either insufficient or were not found at all. Other research found serious negative side-effects of these popular “meditation” programs. Serious research is important to relativize the glossing over of reports on the benefits of individual meditation practices in public discourse. It would be best if it could also be conveyed and anchored in public discourse which method shows which effects and that there are great differences between the “meditation” practices.

If, however, mixed messages about meditation are not linked to a specific method but to the umbrella term “meditation”, this will encourage the (socio-economic-historical) widespread prejudice that meditation is more of a placebo²⁰⁷. These mixed messages reinforce an already wrong perception of meditation, because according to the traditional Hindu perspective, both popular practices (TM, MBSR) would not even count as meditation, since they do not pursue the goal of attaining a quiet mind.

²⁰⁶ Hatha Yoga consist of physical exercises called *asanas*.

²⁰⁷ It only seems to help, if you believe that is helps, but there actually is no profound effect.

The aim of meditation is to gain a silent mind, no thoughts shall disturb the presence, the now. This is the goal of the traditional source of meditation practice, the Patanjali Yoga Sutras. Because then a process is set in motion that connects and releases the strengths of the individual so that he can grow beyond his limits. Thoughts are not a person's highest ability, there is also love and intuition, and beyond there is the thoughtless awareness.

Patanjali was the first to write down the long tradition of meditation. The Yoga Sutras describe eight components that have to be cultivated (the eight limbed path) to attain a silent mind. These eight components consist of rules of moral behavior, physical exercise, detachment from the world and meditation techniques. At that time, one had to determine the whole life to reach the yoga state of meditation.

The other central source of meditation literature is the Bhagavad Gita. It is one of the central books of Hinduism. It describes three types of personalities²⁰⁸ and shows how to overcome all the shortcomings and narrow-mindedness in order to finally reach the yoga state. The Gita describes three ways to develop the own character from a lower type to the highest type. They are the three types of Yoga (methods to reach the Yoga state): Bhakti Yoga [devotion], Jnāna Yoga [knowledge] and Karma Yoga [deeds]. Bhakti Yoga can be understood as the full dedication and love to God, which includes as steppingstones the love for oneself, for others and for the whole creation. The path of Karma Yoga means to lead a moral (dharmic) life of goodness to all. It is intricately connected to the concept of rebirth, which understands life not as a single event but as one event in a cycle of many lives. The different lives are connected, as the main status of enlightenment (or ignorance) is carried on from the end of the last life to the beginning of the next live. All live challenges are test tasks for the own dharma (moral conduct) and should be considered as chances to grow. In a way Karma Yoga can be seen as an integrated element of the Patanjali Yoga Sutras, there expressed in the forms of moral

²⁰⁸ Tamasic, Rajasic and Sattvic, whereas Sattvic is the optimal state or type.

conduct of Yama²⁰⁹ and Niyama²¹⁰. Jnana Yoga, the path of knowledge, can also be found in Patanjali's Yoga. It consists in the study of the self and inner reflection, the knowledge is perceived in meditation, a teacher (guru) assists and helps on that way. A crucial decision is to be made in the very beginning: to find a knowledgeable person that one can trust, a higher personality free of mistakes and worldly interests like money or other favors.

The efforts and the discipline that is needed to follow Patanjali's eight limbed path are not easy to integrate in a modern life, with family, friends and a job. In the 1970s Nirmala Srivastava (a.k.a. Shri Mataji) started to give public speeches and to conduct courses about meditation. Being a self-realized²¹¹ personality since her birth, she tried to find a way to establish the yoga through meditation that was possible to attain, to keep and to learn by normal average persons with average life situations. Sahaja Yoga Meditation, as she called it, reaches through silent affirmations a state of mental silence. Once this yoga connection is established it is much easier to attain again the state of thoughtlessness. This meditational state itself triggers and assists all the other development processes. The other qualities of the traditional Hindu yoga develop step by step along the process of lifelong meditation practice.

Since the 1970s Sahaja Yoga Meditation has been established in more than 95 countries. Nirmaladevi traveled and gave lectures, in the aftermath of her lectures local groups started to conduct Sahaja Yoga Meditation courses. The courses are given by volunteers, always free of cost, organized as nonprofit charitable organizations in the respective countries. Nirmala Srivastava received honor awards from universities²¹²,

²⁰⁹ Yama consists of the five categories: Ahimsa (Nonviolence, non-harming other living beings), Satya (truthfulness, non-falsehood), Asteya (non-stealing), Brahmacharya (chastity, marital fidelity or sexual restraint), Aparigraha (non-avarice, non-possessiveness).

²¹⁰ Niyama consists of the five categories: Sauca (purity, clearness of mind, speech and body), Santoṣa (contentment, acceptance of others, acceptance of one's circumstances as they are in order to get past or change them, optimism for self), Tapas (persistence, perseverance, austerity), Svadhyaya: study of Vedas, study of self, self-reflection, introspection of self's thoughts, speeches and actions), Isvarapranidhana (contemplation on the true self or God).

²¹¹ In Abraham Maslow's terminology a self-actualized or a transcended personality, which puts her own comfort aside for the common betterment.

²¹² "St. Petersburg, Russia, 1993 Honorary Member of the Petrovskaya Academy of Art and Science; Romania 1995, Honorary Doctorate in Cognitive Science, Ecological University Bucharest.

administrations²¹³ and international institutions²¹⁴. SYM has been an official partner to the UNESCO Center for Peace since 2010. The high effectiveness and the effortlessness of its application together with the non-profit character are highly appreciated and open SYM to all classes and castes of the society. Research shows notable significant results of SYM in multidimensional fields, like positive physiological effects on the brain development, the nervous system and body functions and it fosters mental and emotional well-being. In the academic field it showed positive effects on ADHD, Anxiety reduction and sustainable business decisions. Especially the research in the academic sector indicates that there could be more effects found on this type of thoughtless meditation.

It was found that yogic meditation showed positive effects on the social responsibility. We developed a model based on the findings of Kipnis (1994) of the connections between the socially constructed self and its social relationships. Language is one big mediator between the self and the outer world. The individual communicates with its social relations, and they communicate with the individual. In these interactions' emotions are large mediators that influence the relationship, the self-concept and the perception of the social context. Yogic meditation works on the emotions, and it fosters introspection. Kipnis found in interviews that this intensified process of introspection leads in most cases to an increase in the social responsibility. The interviewed explained as they observe themselves closer, they want to improve and develop themselves and this process expands in a way that they want to improve their relationship with others and then expands even further to larger contexts that they want to improve in the world.

There are several approaches of classifications of yoga and meditation techniques in the scientific literature, that arrange different techniques according to different dimensions. We could not find a classification according to the activity of meditation in the literature. From our point of view, this seems to be the most important dimension of a classification

²¹³ Italy, 1986, Declared 'Personality of the Year' by the Italian Government; Brazil, 1994, The mayor of Brazilia presented her the key to the city; New York, 1994 September 26 proclaimed 'Shri Mataji Nirmala Devi Day'; Italy, 2006, honorary Italian citizenship

²¹⁴ United Nations, New York, 1990-1994, Invited for four consecutive years to speak about the ways and means to achieve world peace; China, 1995, Official guest speaker at the Women's Conference in Beijing" (all awards retrieved from Sahaja Yoga World Foundation <https://shrimataji.org/awards/>)

and distinction of meditation techniques. To give an analogy, if one is interested in the research on the effects of work one may be interested in the two dimensions of satisfaction and well-being. To research, one can give out questionnaires to measure these dependent variables on various individual with jobs. This is legitimate, but the results will miss an important and maybe the main dimension, if there is no distinction between the activities carried out. For the dimensions of well-being and satisfaction, *e.g.*, it makes a big difference what the subjects of research are doing, if we compare a farmer, a doctor and a financier. The life reality, the aspects that the individuals relate to be worthy in their activity, the aspects why they are doing what they do and the qualities they gain out of this activity will differ widely. Nevertheless, all the individuals may experience a level of satisfaction through their work and also certain degrees of well-being.

In a secular understanding the aim of meditation practice is to get into a state of thoughtlessness or silent mind. Then the person is in the state of meditation. There are different approaches to reach that point, but some of the popular, widely discussed and researched “meditation or yoga”-techniques do not even aim to reach that point. As they widely stop on preliminary stages, they cannot show the full effect that real meditation or yoga techniques aim for, nevertheless they can show some effects, which explains the research results. In contrast to preliminary stages of yoga/meditation, even methods and activities that are not related to meditation, like going for a walk, reading a book or going surfing will show results to the dependent variables relaxation, well-being or clearing the mind. But these effects are not what meditation and yoga is about, they are side-effects. The aim is to reach a state of balance of the mind, emotions, and body, that enables the meditator to recognize and know him- or herself, the actual state, the strengths and weaknesses, the reasons behind them and to work on them. This recognition and the work on the certain aspects to reach one’s own potentials can be partly done deliberately, willingly and aware, but to a large part this process is triggered through repeatedly reaching the meditative state and is done through mechanisms that are not yet researched and understood enough to give an easy or scientifically satisfying explanation; nevertheless, they occur for the people who are practicing this kind of philosophy or spirituality.

For the present research it was decided to research a meditation technique, Sahaja Yoga Meditation, that aims to reach the meditational state of thoughtless awareness in order to be able to measure and depict potentially as many dimensions and effects as possible out of the research. Also, the reviewed literature seemed to indicate to the writer of this thesis that this type of meditation reaches “above average” and only positive results without adverse effects.

3 Review of the related literature on the three selected dependent variables of the present study

3.1 Dependent Variable 1: Environmental Attitudes

3.1.1 Attitudes

Definitions of Attitudes:

- Attitude is "a mental and neural state of readiness, organized through experience, exerting a directive and dynamic influence upon the individual's response to all objects and situations with which it is related" (Allport²¹⁵, 1935, p. 810).
- "An attitude is a predisposition to experience, to be motivated by and to act toward, a class of objects in a predictable manner" (Smith, Bruner & White, 1956, in Pratkanis, Breckler & Greenwald, 2014, p. 362)
- "Attitude is a psychological construct. It is a mental and emotional entity that inheres in, or characterizes, the person" (Perloff, 2016, p. 38).

Attitudes inherit a direction to act, this distinguishes them from opinions, which are judgements about a set of facts. The classic, tripartite view offered by Rosenberg and Hovland (1960) is that an attitude contains cognitive, affective, and behavioral components. Attitudes determine how a person treats others and how situations are dealt with. And they can form the preliminary stage for action. Attitudes towards the self (self-esteem), towards a mental object and towards an "object with which the person has had

²¹⁵ Gordon Allport (1933-1966) Professor of Social Psychology at Harvard University. He is credited with co-founding humanistic psychology and the concept of functional autonomy with an emphasis on the independence of the motivational system of the personality from the underlying primary impulses, which he advocated in opposition to behaviorism.

direct experience” (Pratkanis, Breckler & Greenwald, 2014, p. 438) play a powerful role in determining social behavior.

The following process shows the possible influence structure on the individual behavior.

Beliefs >> Values >> Attitudes >> Behavior

Attitudes are mostly formed from beliefs and values. Beliefs are ideas that an individual believes to be true. These ideas many a times origin from an outside input like the culture, faith, education, experience, mentors. As the commitment to a belief grows it becomes more and more important to the individual, and the belief forms a value. The individual chooses what is important to him. This can be family, career, wealth, spirituality, etc... Values are important and lasting desirable or morally well-considered properties or qualities that are ascribed to ideas, ideals, patterns of action or character traits. General long-term values shape the more particular and situational attitudes towards an issue to take action or not.

But this is not the only possible influence structure. It can also happen that the values initially influence the beliefs, then what is important to the individual determines what it believes to be true. And these beliefs determine the individual’s predisposition to act, his attitude.

Values >> Beliefs >> Attitudes >> Behavior

Attitudes are not only important constructs for predicting behavior, they are a selective force in perception and memory, they are pervasive and potential serve various psychic functions, “such as social adjustment, object appraisal, knowledge and ego-defense” (Pratkanis, Breckler & Greenwald, 2014, p. 3).

Apart from the personal perspective there is also a cultural perspective. Attitudes are expressed by individuals and have many times a social basis in the membership group thinking. Attitudes of a group put together create a social representation. Personal values of a group put together create cultural values. Attitudes, values and beliefs are substantial parts of a culture. For example, millions of Indians watch the Independence Day Parade

every year on the Television or live in Delhi, because they have a positive attitude towards the parade and the nation.

Attitude Research asks about the conditions under which attitudes come about, how durable they are, and under which conditions they are changed (Smith & Mackie, 2000).

3.1.2 Environmental Attitudes

Environmental attitudes represent the attitudes towards nature²¹⁶. On a superficial level this addresses the question if we like our environment to be clean, our forests, our sea, our air. These are the situations where attitudes play a role for the actual behavior. And these are the situations in which attitudes can be observed or queried on questionnaires and scales. Do I use a plastic cup for my coffee? Do I use a paper, steel or porcelain cup? The reasons lying behind this observable behavior may be different. They may have to do something with availability, comfort, money and they may have something to do with the attitude towards nature. When I am finished with my coffee in a 'one-way' cup, do I put it in the dustbin, leave it somewhere or do I throw it in the nature? And do I use it one-time only and get a new one every time I want more, because they are available at refill or do I keep it with me and use the same 'one-way' cup many times? Again, the reason behind the actual action may be one out of many and most of the times it will be a combination of reasons. And the behavior may not be consistent, or characteristic for the individual, but change throughout different situations. Individuals have different attitudes towards plenty of things or situations. A single attitude like the attitude towards environment, will change when it gets a different importance for the individual. It will get more important, either when the individual will believe it is more important or when the value system of the individual changes.

Since environmental related issues like waste management, ozone-layer or climate change have grown in importance. There have been many attempts to change the

²¹⁶ Environmental Attitude means to acquire a set of values and feelings of concern for the environment and the motivation of active participation in environmental improvement and protection (Aminard, 2010).

behavior of individuals, companies and countries. There have been approaches through international agreements, bans of certain products and regulation through financial compensation. When it comes to the behavior of the individuals, apart from taxes or other financial steering models, knowledge input has been a major approach to address this issue. Knowledge dissemination approaches have been very successful in disseminating knowledge, but are lagging behind in terms of the hoped-for individual behavioral changes.

This is because the rational side is only one part of our being and apparently not the dominant part of doing. Apart from cognition, emotion, gut feeling and social environment certainly affect the decision-making too²¹⁷. And below the attitudes, as a construct that is closely related to the behavioral component, there are the deeper layers of belief and values (see subchapter 3.1.1) that influence the behavior deeper as they are more characteristic long-term aspects of the personality. The constituents of beliefs and values are also not solely rational, but also influenced by emotions, social environment, etc.²¹⁸

So, if one considers it positive to change the behavior towards the environment, it could be more effective to address not only the cognitive side, but to have a wider approach that addresses other aspects additionally. There are different views about climate change²¹⁹,

²¹⁷ Marco Verweij *et al.* argue that “some of the most influential social theories of the last four decades—rational choice theory, behavioral economics, and post-structuralism—contain assumptions that are inconsistent with key findings in affective and social neuroscience. [And] show that another approach from the social sciences—plural rationality theory—shows greater compatibility with these findings” (Verweij *et al.*, 2015, p. 1).

²¹⁸ The degree of environmental awareness and attitude may determine an individual's ecological behavior, *i.e.*, actions which contribute towards environmental preservation or conservation (Axelrod, 1994).

²¹⁹ The main difference is the question whether it is man-made or not. Whereas the majority tends to man-made now. Anyway mostly unquestioned is that there are rising problems caused by nature that are affecting humans and that these will have social implications in the future. Many studies have reported an increasing trend in extreme events, such as heavy rainfall, heat waves and droughts (Jones *et al.*, 2004; Goswami *et al.*, 2011; Trenberth *et al.*, 2007). Several decades of scientific studies have confirmed that the planet is warming. The polar ice caps are melting; the sea level is rising, and the frequency and severity of weather events is increasing (Patz *et al.*, 2014). Scientific research indicates that the earth's climate is rapidly changing due to immense greenhouse gas emissions largely caused by anthropogenic activities (Stern, 2008). The vehicular population is increasing (Scherr & Sthapit, 2009). The world forests are destroying at an alarming rate (Moutinho *et al.*, 2005; Davidson *et al.*, 2012). Climate change is probably due primarily to human activities (Broecker, 1975; Ramanathan, 2010; Cook *et al.*, 2013). Indeed, the IPCC “Climate Change 2014 Synthesis Report Summary for Policymakers” states “Human influence on

environmental issues²²⁰ and the reasons why the efforts on changing of the individual behavior dominates the discussion, while most emissions and pollutants come from the industry²²¹. But whether it is desirable or ethical to try to change or to shape individual behavior or personality by some sort of 'education', is not the focus of this paper.

The ancient scriptures and the philosophy behind meditation techniques and especially traditional Hindu meditation techniques²²² have an understanding of nature that advocates a balance and a harmony between man and nature. Furthermore, there is the philosophy that assumes that the main elements of nature ('Pancha Bhoota') – earth, fire, water, air and space – are also present in humans. The elements are understood as principles. Fire stands for example for everything that is consuming or transforming, also for attention. That's why many meditation practices do lighten a candle while meditating. Breathing techniques use the air element for balancing and calming the mind.

According to the philosophy of traditional meditation the philosophy about balance in nature and the five elements affects the rational mind, the cognitive side, it explains the concepts of harmony and balance within the individual and between the individual and nature. This is what we called the 'real' side of meditation as it has a surrounding theory, that can be expressed.

the climate system is clear, and recent anthropogenic emissions of green-house gases are the highest in history" (Meyer & Pachauri, 2014, p. 2).

²²⁰ Climate change is one of the numerous interconnected environmental issues to consider. Other issues include the loss of biodiversity on a scale equivalent to a mass extinction event, the unsustainable use of both renewable and non-renewable energy sources (such as freshwater and fossil fuels respectively), and the increasing levels of pollutants with resulting consequences for human health and livelihood (Maxwell, 1995; Enger & Smith, 2006). "Climate change cannot be addressed in isolation from environmental degradation as the two are very closely interlinked" (Wiggins & Wiggins, 2009, p. 3).

²²¹ "Some argue that one of the strongest aspects of 'sustainability' is its mobilisation of moral and ethical concerns whilst actually allowing 'business-as-usual' in the advanced economies of the West. Others, such as Owens, argue 'sustainability, eagerly endorsed by governments and at least partially encoded in legislation, may yet prove to be a Trojan horse admitting radical environmental values'" (Burgess *et al.*, 1998 p. 1445).

²²² Sahaja Yoga Meditation, the technique used as intervention, is not a traditional Hindu meditation, but it follows a similar goal, the thoughtless state.

But according to the philosophy of meditation this cognitive knowledge is of little use without the process of coming into meditation and finally reaching the state of meditation. In the practice of Sahaja Yoga Meditation (SYM) the five elements are used for balancing reasons. According to their philosophy the individual experience (the 'reality'²²³) of the cleansing and balancing effects through these elements has a deep and large effect on the belief into the truth of the philosophy and on the valuation of the elements and nature as such.

Without this experience of meditation, the difference between 'conventional' sustainability or environmental education and the education about environment according to traditional Indian philosophy would be only the narrative.

Therefore the examination of the environmental attitudes of the students was found suiting for the examination of the effects of Sahaja Yoga Meditation, as the practice uses 'the elements'. The knowledge about the philosophy of the five elements is common in that part of India, therefore it is not an additional knowledge that is introduced to the students. But the practical experience will be new to the individuals and therefore changes into the environmental attitudes should relate to the experience of the meditation ('the reality') and not to the philosophy ('the real').

If the experiment shows a significant influence on environmental attitudes, the application of Sahaja Yoga Meditation could be introduced as an additional method (aside to conventional sustainability knowledge), in the debate on how sustainability education could be developed further.

According to the philosophy of traditional Hindu meditation and of SYM the attitudes towards the environment are only part of the character development that is expected

²²³ See chapter 2.7 for a more detailed explanation of the difference between 'real' and 'reality' as linguistic concepts and the difference between the technique of meditation and the state of meditation.

through long-term meditation²²⁴. In today's language the personal development in direction to a sustainable character would be expected²²⁵.

For the measurement of the environmental attitudes of the students a standard questionnaire was chosen that fits the research group regarding the sociodemographic characteristics.

3.1.3 Studies on Environmental Attitude

The research field of the connection between environmental attitudes (EA) and meditation practices seems to be so new, that there are only very few researches found at all. This may be because a large part of the meditation research in general deals with forms of mindfulness meditation and Transcendental Meditation. They are not anchored in the traditional meditation approach and philosophy. In how far their theory touches the five elements philosophy is not available to the author, at least for Mindfulness Based Stress Reduction (MBSR) it is unlikely as references to Buddhist teachings is explicitly not part of their programs. According to the knowledge of the author their practices do not involve harmonizing practices with the help of the elements. Therefore research endeavors in that direction may not be thought of or may not be promising enough.

The author has found only three studies directly addressing the correlation between environmental attitudes and meditation, it was decided to present them here all, in order to give a picture of the state of the current research on this topic.

Thiermann *et al.* (2020) did an exploratory study on mindfulness meditation that "showed that advanced meditators are happier, more deeply motivated toward the environment and they generate less environmental impact from animal-proteins" (Thiermann *et al.*, 2020, p. 15). This quoted the essence of their study in their point of view and they did not know

²²⁴ The experiment was done for half a year with daily meditation sessions for 45 minutes (except Sundays).

²²⁵ See chapter 2 for expected changes on the character.

whether long time meditators of mindfulness are more likely to develop a (slightly) better attitude towards the environment or if people with a higher environmental attitude are more likely to start mindfulness meditation. This weakness of the study results from the set-up. It was a one-time online-questionnaire, with no pre-post-test construction. Targeting group were mindfulness meditators and vegans, they had n=300 respondents, out which they recruited 99 from a crowdsourcing network.

Crowley (2010) did a study with managers on a 10-day Vipassana Meditation workshop. Vipassana is a type of mindfulness meditation with more traditional Buddhist orientation than MBSR. The Vipassana Group improved significantly on pro-environmental attitude and moral-ethical behavior. But as the levels in the pre-test of the experimental group were lower than in the control group, the post-test results. The data used for assessment were 17 for Experimental Group and 7 for Control Group only. The overall number of participants is low n=24. The groups should be of similar size and at a similar level at the beginning. The meaningfulness of the study is very low.

Geiger *et al.*, (2019) did a longitudinal study with the intervention sustainability-adapted mindfulness-based intervention (sMBI) and did not find “evidence for neither direct effects on sustainable consumption behavior or related attitudes, nor for the reduction of the attitude–behavior gap” (Geiger *et al.*, 2019, p. 1).

Summarizing the directly meditation related research available in regard to environmental attitudes: The results of the Thiermann *et al.* (2020) study are very vague and the Crowley (2010) study shows only questionable results. Geiger *et al.*, (2019) are clear in their results that there was no evidence of any researched effect.

This encourages the author to add a more sophisticated study to this field of research. In addition, with a meditation type not researched before, Sahaja Yoga Meditation, which stands in the tradition of thoughtless awareness meditation.

Studies that researched the effect of sustainable or environmental education are available in a greater number and of better quality. Even so the education programs show effects

on an increase knowledge the students don't know what to do with this knowledge²²⁶. And there are only small or no effects of the knowledge-based education programs on the environmental attitudes²²⁷.

Socio-economic status²²⁸, the area of residence (urban or rural) as well as the type of school (government or private)²²⁹ seems to make a difference in the general attitudes

²²⁶ According to Prella and Solomon (1996) the connection between environmental education and behavior is not so simple. They conducted a study on young people's general approach to environmental issues in England and Germany and found that even though many individuals from those countries have the knowledge and positive attitudes towards environmental issues, they do not have any plans to solve them.

²²⁷ Yount and Horton (1992) studied the factors influencing environmental attitude, the relationship between environmental attitude defensibility and cognitive reasoning level. They found an increase in their defensibility, defined as "the amount of factual information that is brought to bear on an environmental attitude decision" (Yount & Robert, 1992, p. 1059). But comparing experimental group (EG) with the control group students, they found no change in the environmental attitude through the intervention 'environmental class'.

Keen (1991) found out the influence of the earth education program 'sunship earth', on ecological knowledge and environmental attitudes of 5th and 6th grade classes. There is a significant increase in the ecological knowledge of the students who attended the 'sunship earth' program. However, Participation in the 'sunship earth' program did not result in better positive environmental attitudes.

A study by Reid and Sadi (1997) on the attitude towards the environment in Jordanian and British primary school children showed, that environmental education programs produce only slightly positive results.

²²⁸ Ananth (1993) studied environmental attitude of 10th standard students of Bangalore city in relation to their sex, socio-economic status and environmental knowledge and found that there exists no significant difference in environmental attitude between boys and girls. Differences in levels of socio-economic status did account for differences in environmental attitude.

Chethana's (2003) studied the effect of background variables on the environmental attitude of 9th standard students in India and found that socio-economic status has the significant impact on environmental attitude. Background variables such as locality, sex, type of school management did not show any significant difference in the environmental attitude of 9th standard students.

Rout and Agarwal (2006) conducted a study of environmental awareness and environmental attitude of students at high school level in India. The findings of the study are the students of science stream have more environmental awareness and environmental attitude than the students of non-science stream. There was no significant difference between male and female students in their environmental awareness and environmental attitudes.

²²⁹ Abraham and Arjunan (2005) conducted a study on Environmental Attitude and Pro-environmental behavior among secondary school children of Kerala and found that there exists a significant difference in gender in the attitude of secondary school children towards environment, boys possess better attitude than girls. There exists a significant difference between rural and urban

towards the environment. Which leads to the possible conclusion that there may be mostly a relationship in regard to environmental attitudes to the socio-economic status. Urban areas, private schools can be considered to relate to a higher socio-economic status and showed higher EA results than in rural areas and governmental schools which can be correlated to lower economic status. In regard to our study which is conducted in a rural area with students of a lower economic status in governmental schools, there are no results expected regarding difference caused by these factors – as the individuals of the research population are all from the same milieu.

Regarding the difference of environmental attitudes in relation to sex there seems to be rather no differences as studies show this or mixed results²³⁰

3.2 Dependent Variable 2: Academic Anxiety

in the attitude of secondary school children towards environment, urban subjects possess better attitude than rural subjects.

Yousuf and Bhutta (2012) studied Secondary School Students' Attitude towards Environmental Issues in Karachi Pakistan and found that there is a significant difference between students' attitude towards environmental issues towards discipline in both government and private secondary schools.

Tuncer, G., *et al.* (2004) studies the Environmental Attitudes of the 6th Grade Students from Rural and Urban Areas: a Case Study for Ankara and found that students attitudes were differed according to school district.

²³⁰ Kumar and Patil (2007) conducted a study on influence of environmental education on environmental attitude of the postgraduate students in India. standard Environmental Education course influences the attitude level of the students towards environmental pollution and related issues. There is no significant difference between male and female students in their attitude towards environmental pollution and related issues.

Manjengwa (1998) conducted a study on Environmental Education for sustainable development in secondary schools in Zimbabwe and found that there is a significant difference between boys and girls in knowledge, attitude, problem-solving skills, and environmental activities of secondary school students, girls generally had more environmental knowledge than boys.

3.2.1 Anxiety

Anxiety is a complex combination of emotions that include fear, apprehension and worry. It is distinguished from actual fear by being non-specific, vague or derived from an inner conflict. Anxiety appears to have various components, one cognitive, one somatic, one emotional, one behavioral (Seligman, Walker & Rosenhan, 2001).

The evolutionary function of anxiety is seen as bringing about a protective and survival mechanism in an actual or even perceived dangerous situation that prepares the individual for appropriate behavior in a fight-or-flight decision. Emotionally, anxiety causes a sense of terror or panic, nausea and chills. From a somatic (or physiological) point of view, the body prepares itself for the threat (an emergency reaction) and bundles and mobilizes its forces: blood pressure and heart rate increase, blood flow to the most important muscle groups increases and the functions of the immune and digestive systems decrease. It may be accompanied by physical sensations such as palpitations, chest pain, shortness of breath, nausea, internal tremors. Outwardly, the somatic signs of anxiety can be pale skin, sweat, tremors, and papillary dilation. The somatic signs are therefore a hyperactivity of the autonomic nervous system. The cognitive component involves expectations of a widespread and uncertain danger.

Anxiety has activating and paralyzing components. Depending on the level of arousal, it increases the energy and tension and thus activates the forces, but if it goes beyond this point it has a negative effect on the cognitive, somatic, emotional and behavioral components. The Yerkes-Dodson law e.g., describes the cognitive performance as an inverted U-shaped. If the arousal level increases, effectiveness and productivity increase first, but after a certain point the productivity decreases (Yerkes and Dodson, 1908).

Little anxiety or stress can function as a positive influence, but an excessive amount of anxiety may lead to a disorder and fearfulness as a property (or result from this). Charles Spielberger developed an anxiety model in 1966. He called the short-term anxiety, the state-anxiety and the long-term anxiety which represents a quality of an individual, the trait-anxiety, referring to a relatively stable personality trait. He defines state anxiety (STATE anxiety) as an "emotional state characterized by tension, anxiety, nervousness, inner restlessness

and fear of future events, as well as increased autonomic nervous system activity." Spielberger defines anxiety as a quality or property (TRAIT) as "stable inter individual differences in the tendency to evaluate situations as threatening and then react to an increase in state anxiety" (Spielberger *et al.*, 1970, p.7).

In any case, anxiety is not always pathological or non-adaptive: it is a common emotion like fear, anger, sadness and happiness, and it is an important function.

In his flow model, Csikszentmihalyi locates anxiety in the areas where low personal abilities are confronted with high challenges, while in situations with high personal skills high challenges can even create flow moments for the individual.

Meditation is described as to decrease anxiety and to increase personal skills, according to the philosophy of meditation.

3.2.2 Academic Anxiety

The performance-inhibiting effect of anxiety has been discussed in numerous scientific papers (Hackl, 1995). Allen J. Otten's deliberately does not use the also common terms 'test anxiety' or 'evaluation anxiety' but 'academic anxiety' which he defines as "disruptive thought patterns and physiological responses and behaviors that follow from concern about the possibility of an unacceptably poor performance on an academic task" (Ottens, 1991, p. 1).

But there are many more factors that can create anxiety in a school setting than just assessment tests. Shakir defines Academic Anxiety as "anxiety which is related to the impending danger from the environment of the academic institutions including teacher in certain subjects like Mathematics, English, etc. It is a mental feeling of uneasiness or distress in reaction to a school situation that is perceived negatively" (Shakir, 2014, p. 29).

Research points out that an average level of fear or anxiety is helpful as a disciplining and motivating factor (Kahan, 2008; Nejad *et al.*, 2011; Donnelly, 2009). But "one must recognize that school learning is not simply conditioning, but a far more complex process.

There is a widespread tendency to ignore this [...] and to slip in the additional assumption that anxiety is substantially motivation. At [an] empirical level [...] anxiety is more frequently a cognitive disorganizer than an aid to learning” (Cattell, 1966, p. 46).

In its extreme pathological form, academic fear can lead to anxiety disorders or it can be an expression of other anxiety disorders. The origin of AA can have various causes. Academic anxiety may be present as the primary brain disorder or it may be related to other medical problems, including other psychiatric disorders.

However, academic anxiety is seen as a problem worldwide, the effects of which range from poor performance to personality disorders and suicides.

3.2.3 Studies on Anxiety and Academic Anxiety

Anxiety is one of the most common psychological disorders in school-aged children and adolescents worldwide (Costello *et al.*, 2003). Anxiety is associated with substantial negative effects on social, emotional, and academic success (Essau, Conradt & Petermann, 2000). In the United States, 63% of college students experienced anxiety, while 23% were diagnosed or treated for anxiety (American College Health Association, 2018).

Influencing factors among college student’s anxiety are disturbed sleeping behaviors due to excessive caffeine use and all night staying awake (Peltz, *et al.*, 2016), loneliness (Richardson, Elliott & Roberts, 2017), study stress or doubts about the studies (Newcomb-Anjo, *et.al.*, 2016). Anxiety, depression, and stress levels are highest when the students come to college first and remain elevated in the second semester (Conley *et al.*, 2018). Academic anxiety of adolescent female is affected by their socio-economic status and based on his research findings reported the vicinity was found an important factor for academic anxiety in female students (Gautam, 2011; Siddiqui & Rehman, 2014, p.75). Between 1991-2016 the psychological well-being (measured by self-esteem, life satisfaction, and happiness) of US 8th–12th graders (age 13–18) decreased suddenly after 2012 and it correlated with an increase of time spent on electronic communication,

smart phones and screen activities, like social media, internet and gaming. While cyclical economic indicators as unemployment showed no significant correlation (Twenge *et al.*, 2018). A longitudinal study in Sweden (2017) showed an increase of anxiety levels for young adults of 16-23 years (Calling *et al.*, 2017).

Every culture has a huge impact on what is regarded right and wrong. The cultural aspects determine even what is considered to be an illness and how it is treated. Medical sociology pays attention to these aspects. Anxiety is treated and researched by psychologists. "Listening to patients is integral to the practice of psychiatry in order to understand their illnesses and thereby arrive at diagnoses. The patient's narrative is frequently influenced by cultural beliefs and experiences, as is the interpretation by the interviewer. Because the concept of normality differs across cultures, understanding the cultural context is crucial to the process of understanding and treating mental illness" (Khambaty & Parikh, 2017, p. 117).

Khambaty and Parikh describe some Indian specifics regarding anxiety:

"Indian culture [...] values intimacy, family unity, and security, making it a collectivist society [...]. Such societies emphasize interdependence and value group harmony; thus, 'we' is more important than 'I'. Social rules for behavior are strict in these cultures; deviations in behavior often result in embarrassment, whereas guilt and self-blame are experienced in individualistic cultures, which are guided by internal sanctions [...]. Thus, the expression of anxiety as either embarrassment or guilt may depend on social norms and context.

So, it is crucial to consider both the cultural orientation of the individual and the cultural norms within which the individual exists, especially if the cultural orientation of the individual is at either extreme of 'individualism' (idiocentric) or 'collectivism' (allocentric)". (Khambaty, M., & Parikh, 2017, p. 118).

Many meditation methods have shown positive effects on anxiety in research. Khambaty & Parikh conclude, that "India is one country where cultural factors exercise a profound influence on the presentation, diagnosis, and treatment of anxiety disorders. An awareness of the modifying effects of these factors contributes to more accurate and

relevant diagnoses, as well as more effective and holistic treatment modalities” (Khambaty & Parikh, 2017, p. 123).

A study of a small sample of 17 students with mean age of 20.7 years at the University of Rhode Island College of Pharmacy had a 60-minute intervention with vinyasa yoga followed by a 30 minutes guided meditation once in a week for six weeks and found that stress and anxiety levels were dropped (Lemay, Hoolahan, & Buchanan, 2018).

Michael M. Delmonte from the psychosomatic Unit of St. James Hospital, Dublin, Ireland, reports that “prospective meditators tend to report above average levels of anxiety” (Delmonte, 1985, p.91), the review contains research about Transcendental Meditation (TM) and Zen Meditation. Delmont draws the conclusion for the researched practices that “however, the evidence suggests that those who practice regularly tend to show significant decreases in anxiety. Meditation does not appear to be more effective than comparative interventions in reducing anxiety. There is evidence to suggest that hypnotizability and expectancy may both play a role in reported anxiety decrements. Certain individuals, with a capacity to engage in autonomous self-absorbed relaxation, may benefit most from meditation” (Delmonte, 1985, p. 91).

Effect of Sahaja Yoga Meditation in reducing academic stress has been found in a study with non-equivalent control group design by providing 6 weeks of Sahaja Yoga Meditation program for the experimental group. Academic stress was assessed using standard questionnaire before and after the intervention and found that Sahaja Yoga Meditation is helpful to manage the academic stress (Hotkar, 2017).

Various meditation practices seem to reduce anxiety levels. Above-described studies are only a few out of many more. Stress and anxiety reduction belongs to the core competences of many meditation techniques (or it is at least presented like this). But it is not clear whether meditation practices are more successful in their reduction rates, than other “conventional” methods. If they are at the same level the question arises what are the benefits of a particular method and what are possible long-term side effects, for example of a conventional medical treatment, but also of specific meditation techniques

(see chapter 2.2.3). Therefore, the measurement of the effect size will be an important point in the statistical evaluation of the experiment.

3.3 Dependent Variable 3: Academic Performance

3.3.1 Academic Performance

In every society, education plays a particularly important, vital, and central role for personal, social, economic, and cultural development. In today's rapidly changing modern and technological world, education is becoming a necessity for everyone. Education serves as a fundamental tool for promoting cultural, spiritual, and social values for individuals. It also helps prepare a person to acquire the skills and abilities necessary for their life in society.

The term “Academic Performance” stands for the academic outcome of the students in their studies. It is also known as academic achievement. Usually in school, students study different subjects in each class under the guidance of different teachers. Student performance is typically assessed through teacher's observations, tests, and exams conducted at a school at different time periods or study intervals. The results of the examinations in marks or grades or in both forms must be recorded and reported to the parents on a regular basis. These records would be made by the respective teachers and kept in the school administration.

“Grades may not reflect well a student’s academic ability but [...] they are at least a reflection of his performance within the educational system” (Inkles & Holsinger, 1974, p. 5).

The student's academic performance can be affected or influenced by the student's interest, teaching methodology, intelligence, personality, motivation, equipment and planning, school environment, home environment, stress and anxiety, social behavior, rewards, etc. In particular, individual differences such as intelligence and personality,

family factors such as socio-economic status of the family, involvement of parents in academic training, educational level of parents, occupation of parents; institutional factors such as type of school, teaching method, student-teacher relationship; cognitive factors such as attention, memory and thinking ability of the student; non-cognitive factors such as interest of the student, self-efficacy, level of motivation, attitude of the student, learning habits, learning ability, creativity, co- / extracurricular activities such as sport, yoga, meditation, music, dance etc., affects and influences the academic performance of the student.

Various researchers have identified the influence of various factors on academic performance, like the parental involvement, and the family environment (Devi & Maryuri, 2003), home environment and family variables (Arti & Prabha, 2005), anxiety level (Trivedi, 1995), Gender (Farooq *et al.*, 2011), meditation (Chang & Hiebert, 1989; Hall, 1999).

According to the philosophy of meditation through the state of meditation an individual becomes generally more balanced, which leads to a development of various of skills, that are not necessarily reflected by the measurement system of grades in school subjects. The balancing process within the meditation process strengthens where it is necessary to overcome inertia and reduces the supply of energy in areas of overactivity on the way to a state of equilibrium. According to the meditation philosophy, this happens automatically and in different areas of human existence.

SYM and meditation in general is not designed nor intended to be a booster program for the educational performance (including sustainability and environmental attitudes). If any effect is shown, these are side effects of general development of the individual, induced through the meditational states, according to the philosophy.

Therefore, measuring changes in academic performance through the intervention with Sahaja Yoga Meditation will not measure every possible or impossible effect that the meditation will induce. But it measures effects of SYM on a, for the individuals and their families, highly relevant issue – as the academic performance is many times considered to set the course for life.

3.3.2 Studies on Academic Performance/ Academic Achievement

The situation in India is such that there is a very high level of competitiveness amongst the students for higher education, which leads in many cases to family and societal pressure on the students from an early age on. In the chapter on DV2 Academic Anxiety it was already discussed that small pressure may increase the performance, but to high experienced pressure levels can lead to underperformance²³¹. To high pressure can also lead to the establishment of more serious or chronic mental health problems. It was found that 65 percent of school children in Orissa (state) were suffering from emotional problems of one type or another. Different sociocultural, political, economic and other environmental reasons are seen as cause (Barmola, 2013, p. 231).

The family environment is of great importance for the mental health of students which again influences the academic performance²³². The academic performance is also influenced by the socio-economic status²³³ or the education level of the parents²³⁴. Educated parents can help, supervise, and communicate better regarding their schoolwork and activities. The academic performance of students depends upon the parental involvement in their academic activities (Henderson, 1988; Shumox & Lomax, 2001).

²³¹ So, it was found that high academic anxiety plays a responsible role for low academic achievements (Rajchert, Zoltak, & Smulczyk, 2016).

²³² In research conducted on high school students found that family environment did play a significant for the mental health of the students which again played a significant role for their academic performance (Barmola, 2013). Academic Performance can be influenced by the living areas of the students. In research it has been reported that the academic performance of urban children is better than the rural children (Rosigno & Crowely, 2001; Usha, 2007).

²³³ In another study, it has been found that socio-economic status and parents' education played a significant role on secondary school students' academic performance (Farooq *et al.*, 2011). Socio economic status shows a significant and positive relationship with academic achievement of students (Holmquist, 2003).

²³⁴ Parents' education plays a significant role in their children achievement (Krashen, 2005).

Because research strongly suggests that academic performance correlates with stress, anxiety, and mental health in general, it is also obvious to assume, that if meditation can reduce stress and anxiety, it could also improve academic performance. And indeed, the betterment of academic performance through meditation practices has been shown for many meditation types. The research is again available in large quantities for mindfulness meditation practices²³⁵ which are in many cases actually 8-week MBSR courses. But also, Transcendental Meditation²³⁶, Hatha Yoga²³⁷, and other meditation types²³⁸ are researched. And it is was researched especially in the classroom situation²³⁹.

²³⁵ An experimental study, conducted on African and American college students to measure the effects of Mindfulness Meditation on their academic achievements revealed that mediation group outperformed the non-meditative group in Grade Point Average Score (GPA)s. (Hall, 1999). The academic performance of learners is improved during and immediately after Mindfulness Meditation practice (Beauchemin, Hutchins, & Patterson, 2008; Hall, 1999; Kember, 1985; Mrazek *et al.*, 2013; Lin & Mai, 2016). Pamela Hall showed that the academic performance of the meditation (namely experimental) group was considerably higher than that of the no meditation (namely control) group during the practice period (Hall, 1999; Lin & Mai, 2016). However, some researchers questioned whether a regular Mindfulness Meditation intervention exerts influence during the follow-up period (Hutcherson, Seppala, & Gross, 2008). It remains unknown that whether regular Mindfulness Meditation would exhibit more long-lasting effects (Hutcherson *et al.*, 2008; Lin & Mai, 2016).

²³⁶ A qualitative study has been conducted to find out the effect of Transcendental Meditation on middle school students. Semi-structured interviews have been conducted after giving the students 20 minutes meditation sessions for one academic year. Students reported that meditation helped them to improve their academic performance (Rosaen & Benn, 2006).

²³⁷ Effect of yoga on academic performance in relation to stress has been investigated in a study and found that the students who attended the yoga module performed better in overall academics that in those students who did not attend the yoga module (Kauts & Sharma, 2009).

²³⁸ The effect of actualism meditation on academic performance has been studied among randomly assigned experimental group and control group students and found that there was mildly facilitative effect on academic effectiveness as measured by performance on examinations (Fiebert & Mead, 1981).

²³⁹ The impact of classroom-based meditation on academic performance of undergraduate college students was investigated with a quasi-experimental non-equivalent control group design. Six minutes meditation session was given to experimental group for 15-week semester (Napora, 2013). In different studies, it has been found that there is an improvement in exam grades in measuring academic performance, as a result of classroom meditations (Kember, 1985; Fiebert & Mead, 1981; Nidich *et al.*, 1986). Research on meditation has been conducted in an elementary school setting by comparing the students with and without meditation training on academic performance (Nidich *et al.*, 1986).

Again, the question arises about the 'independence' of this research, as especially for the to pay meditation types, even if not being actually paid for in the school situation, a certain advertising effect could be considered as motivational factor behind the research. And research quantity does not necessarily implicate research quality. Many experimental samples are small, results are not fully convincing and a lack of sophisticated methodology for the experiment is to be found.

A small intervention span may explain small effects, but a reciprocal conclusion, that a long intervention time would lead to necessarily better results cannot be drawn.

Stress and Anxiety are not the only influential parameters of academic achievement. Of course, the general cognitive capacity is a main factor, but motivation (Sarfaraz & Nigam, 2008) and classroom climate (Hirunval, 1980) for example have been found also positive correlated to academic performance. Meditation is not the only method with positive effects. Social-psychological interventions (brief exercises that do not teach academic content but instead target students' thoughts, feelings, and beliefs in and about school), shows positive effects on educational achievement (Yeager & Walton, 2011).

3.4 Summary and Conclusions regarding the Dependent Variables used

The research experiment will be evaluated by measuring three dependent variables, and Sahaja Yoga Meditation SYM as intervention being the independent variable. The independent variable has two levels of action. One is that what can be named and observed, this is what linguistic calls "the real", the *practice or the technique of meditation*²⁴⁰, as well as the explanations of the philosophy, given in the instruction. The

²⁴⁰ For example: The individuals are sitting, they hold their left hand open on the lap, the right is on the heart and they are asked to internally ask themselves "Who am I? Am I this body, these thoughts, these emotions?". Then they sit in silence, after some time the hand is moved to another place and another sentence is asked internally. Etc. – This is an example for the observable technique of Sahaja Yoga Meditation; "the real".

other level is that of the *state of meditation* which is that what cannot be named or observed – in linguistic terminology²⁴¹ “the reality”. According to the philosophy of Sahaja Yoga Meditation (and traditional meditation) the state of meditation is reached when there are no thoughts. This state of meditation than is said to balance and nourish the inner energy system. On a gross level these are the body functions that are controlled by the autonomous nervous system, on a subtle level this addresses emotions, trained thought or behavior patterns. The balancing of that system shall lead to better energy circulation, which – in the short run – shall release tensions and stress, calm down or energize. And – in the long run – shall lead to a personal development on multiple levels. Which quality is developed depends largely on the condition of the individual, what he needs and wants. The processes run largely autonomously, triggered by the state of meditation.

Therefore, the effects of the state of meditation will be differing from individual to individual. Some individuals may show progress in the measured variables, while others may show a development in some other areas, not measured by the experiment. Therefore, a change in the measured variables shown by the individuals in the experiment does not capture the whole sum of effects triggered by the regular (daily) state of meditation.

The reason why these dependent variables were chosen is that they are of great importance to the students and the family. This is most evident for the dependent variable DV3-AP Academic Performance. The students go to school to learn something. Their learning results are measured and recorded in grades, which are considered to be very important for the further course of their life's. If there is a method that could improve the grades this will be highly appreciated.

Anxiety is a problem in many modern school and education systems, in India it is a big problem. Stress and anxiety reduction are the most undoubted effects of meditation in general, regardless which type of meditation, this is mostly the first association that people have. Therefore, the possibility of an improvement (less) of Academic Anxiety (DV2-AA) is of great value for many students and will be appreciated if the SYM shows significant effects here.

²⁴¹ See chapter 2.7.

The choice of the Dependent Variable 1 Environmental Attitudes (DV1-EA) mainly follows two lines of thought. First, the major challenges of the world (as described by the Sustainable Development Goals) are considered to be challenges of sustainability in very different areas (e.g., good health, quality education, peace and justice). The climate is widely perceived as the most urgent area in which quick action is required. When it comes to an individual level this addresses changes in the behavior in regard to the environment. This behavior is observable. In addition, there exist good evaluated standard tests already which can be used. The other sustainable problems deeply affect the individual, but the focus of action there is less on the individual change, but more on changes that concern companies, administrations and legislation. A sustainable behavior in these areas of the individual gets visual in how they act in their different roles, as part of the community, as leaders in companies, as part of a democratic process, as a voter as a politician, etc... The philosophy of traditional meditation encompasses many of the ideals that today are called sustainable, there it is referred to as balance or harmony of the individual, in the family, in the society and in the country, between generations, the vision of a better world for the future, also as balance and a harmony with nature. Therefore, the aspect of harmony with the nature is only one aspect of a harmonious life, but it follows the deeper concept of a harmonious life as such. Following the philosophical concept of meditation, the attitude towards the environment seems not only to be an indicator for the adoption of the concept of sustainability in relation to nature, but also a promising hint for the development of a sustainable personality, who also has the ideas of balance and harmony internalized and embraces them also in many other areas of life.

The second idea behind choosing the dependent variable DV1-EA is that SYM uses the elements (earth, fire, water, air, space) as part of their meditation technique; according to the philosophy of the five elements as concepts that permeate both nature and man. The experience of the elements of nature in the meditative state ('the reality') might lead to a more direct or earlier development in direction of a deeper appreciation of nature and its aspects, than to other aspects of sustainable attitude as such. The philosophy of meditation does not explicitly emphasize the development of a harmonious personality with nature, especially with regard to its preservation or environmental protection, as we understand it today, but rather it generally emphasizes the importance of the development of a balanced personality and its inherent qualities and virtues as such.

A balanced and harmonious life in relation to nature meant in Patanjali's time reading nature and acting according to the seasons, but it also meant not using more than necessary, not wasting resources and keeping an eye on the longer cycles in order to ensure a good yield in the future, which prevents the earth and its resources from being exploited. We see parts of today's understanding of sustainability rooted in the traditional philosophy.

Attitudes are the expression of deeply rooted beliefs and values; they are often the forerunners of action. Because they're closer to the surface, they're also easier to spot. They are easier to call up for the individual and thus easier to determine using self-disclosure questionnaires. In addition, because of the limitations and possible biases of the self-reporting, observations by teachers are used to underpin and interpret the statistical results, which are necessary to generate a prediction in the sense of "if the method is used, this will happen". In particular, with regard to DV1-EA Environmental Attitudes and DV3-AP Academic Performance, where there is not that much research regarding intervention with meditation in general, and with regard to Sahaja Yoga meditation in particular, it is necessary to build a solid foundation for the creation of own reliable statements and on the other hand as a basis for further research.

PART II:
METHODOLOGY AND PROCEDURE OF
CONSTRUCTION OF DATA

4 Description and Research methodology of the present study

4.1 Description of the present study

4.1.1 Objectives of the study

The present study endeavors to find out whether the Sahaja Yoga Meditation has any significant effect on the selected dependent variables with the following objectives.

1. To assess the environmental attitude of secondary school students.
2. To study the effect of meditation on the environmental attitudes of secondary school students.
3. To assess the academic anxiety of secondary school students and to know the level of Academic Anxiety among Secondary School Students.
4. To study the effect of meditation on academic anxiety of secondary school students.
5. To study the effect of meditation on the academic performance of secondary school students.
6. To compare the academic anxiety of meditative and non-meditative secondary school students.
7. To find out the relationship between academic anxiety and academic performance of the secondary school students.
8. To suggest the strategies to enhance the academic performance of secondary school students.
9. To suggest the Indian policy makers the importance of meditation at the secondary school level.
10. To suggest the importance and possibilities to include the meditation in Indian new curriculum.

4.1.2 Hypotheses and the expectations on the possible results

- It is expected a significant difference between an experimental group and a control group in the effect of meditation on environmental attitudes of secondary school students.
 - It is expected a significant difference between an experimental group and a control group in the effect of meditation on academic anxiety of secondary school students.
 - It is expected a significant difference between an experimental group and a control group in the effect of meditation on academic performance of secondary school students.
 - It is expected a relationship of one dependent variables with other two dependent variables (multiple correlation).
 - i. There is a relationship of environmental attitudes with academic anxiety and academic performance.
 - ii. A relationship of academic anxiety with environmental attitudes and academic performance.
 - iii. A relationship of academic performance with environmental attitudes and academic anxiety.
 - It is expected a relationship between two dependent variables after controlling the effect of third dependent variable (partial correlation).
 - i. A relationship between environmental attitude and academic anxiety after eliminating the effect of academic performance.
 - ii. A relationship between environmental attitude and academic performance after eliminating the effect of academic anxiety.
 - iii. A relationship between academic anxiety and academic performance after eliminating the effect of environmental attitude.
- **Operational Hypothesis 1**
 - Subjects with the treatment “Meditation exercise according to the method of Sahaja Yoga” differ significantly in the pre- and post-tests in their Environmental Attitude with an error probability of $p < 0.01$.

- **Operational Hypothesis 2:**
- Subjects with the treatment "Meditation exercise according to the method of Sahaja Yoga" differ significantly in the pre- and post-tests in their Academic Anxiety with an error probability of $p < 0.01$.
- **Operational Hypothesis 3:**
- Subjects with the treatment "Meditation exercise according to the method of Sahaja Yoga" differ significantly in the pre- and post-tests in their Academic Performance with an error probability of $p < 0.01$.

4.1.3 Research Questions

- Will the designed program of meditation bring any positive impact in students?
- Will the designed program of meditation bring any positive change in students' behavior in general?
- Will the designed program of meditation reduce the academic anxiety of students?
- Will the designed program of meditation bring about increase in academic scores of students?
- Will the designed program of meditation bring a positive attitude towards environment among the students?
- Will there be any influence of the group of meditative students (as a minority group in the school) on the other students at the school?
- Will there be any influence of the group of meditative students (as a minority group in the society) on the other social actors?
- Will the designed program of meditation help the students to overcome their individual difficulties?
- Will the designed program of meditation be interested and useful for the students?
- Is it good to include the meditation program in the school schedule?

4.1.4 Significance of the present study

Present research is trying to find out the effect of meditation on selected aspects of secondary school students in East Godavari District of Andhra Pradesh state in India.

- The result of the study will add new knowledge in the research field.

- The study will give a trend scientific base to the ancient Indian culture of discipline of yoga and meditation, which was advised for general well-being and healthful living.
- The study could help in the decision-making process of National Council of Educational Research and Training (NCERT) and State Council of Educational Research and Training (SCERT), in India, whether the meditation should be added in the new curriculum framework or not.
- The findings of the present study would help in a long way to educational professionals, administrator, curriculum developers and policy makers in the Indian context.
- The study will also help in providing new source for guiding further research studies in the similar field.
- The present study is a quasi-experimental study with pre-test and post-test method to observe if there is a measurable effect of meditative practice on the secondary school students. Therefore, the study may be useful to improve the lifestyle standard of the individuals.
- Students require certain basic abilities and techniques to cope with new arising problems. This research indicates that meditation may be another powerful tool in Indian students' toolbox.
- In the recent decades, the global interest for meditation has grown. Also, in the academic world meditation research is growing in many scientific disciplines. Large parts of the attention are on different health issues or neurological processes, but the fields of scientific meditation research are not limited to these areas. The present study will become a contribution to the research on meditation in academic field and a study confirming the historical and anthropological view of meditation in India.

4.1.5 Locale of the Study

The location of the present study is in the East Godavari district in the state of Andhra Pradesh in India. The East Godavari district is one of 13 districts of Andhra Pradesh and has 7 revenue departments with 64 mandals. The East Godavari District got its name from the Godavari River, which is the second longest river in India. Like the longest river Ganges, it is holy. The Godavari River crosses the country nearly complete from East to

West, it rises near Nashik (North of Mumbai), 80 km from the Arabian sea and flows in a huge delta into the Indian sea situated on the west of the Indian peninsula. The two main streams of the fruitful delta area are the east and the west Godavari River. This East Godavari District is known as the green belt of Andhra Pradesh because of its green rice fields and coconut trees. It occupies much of the delta area.

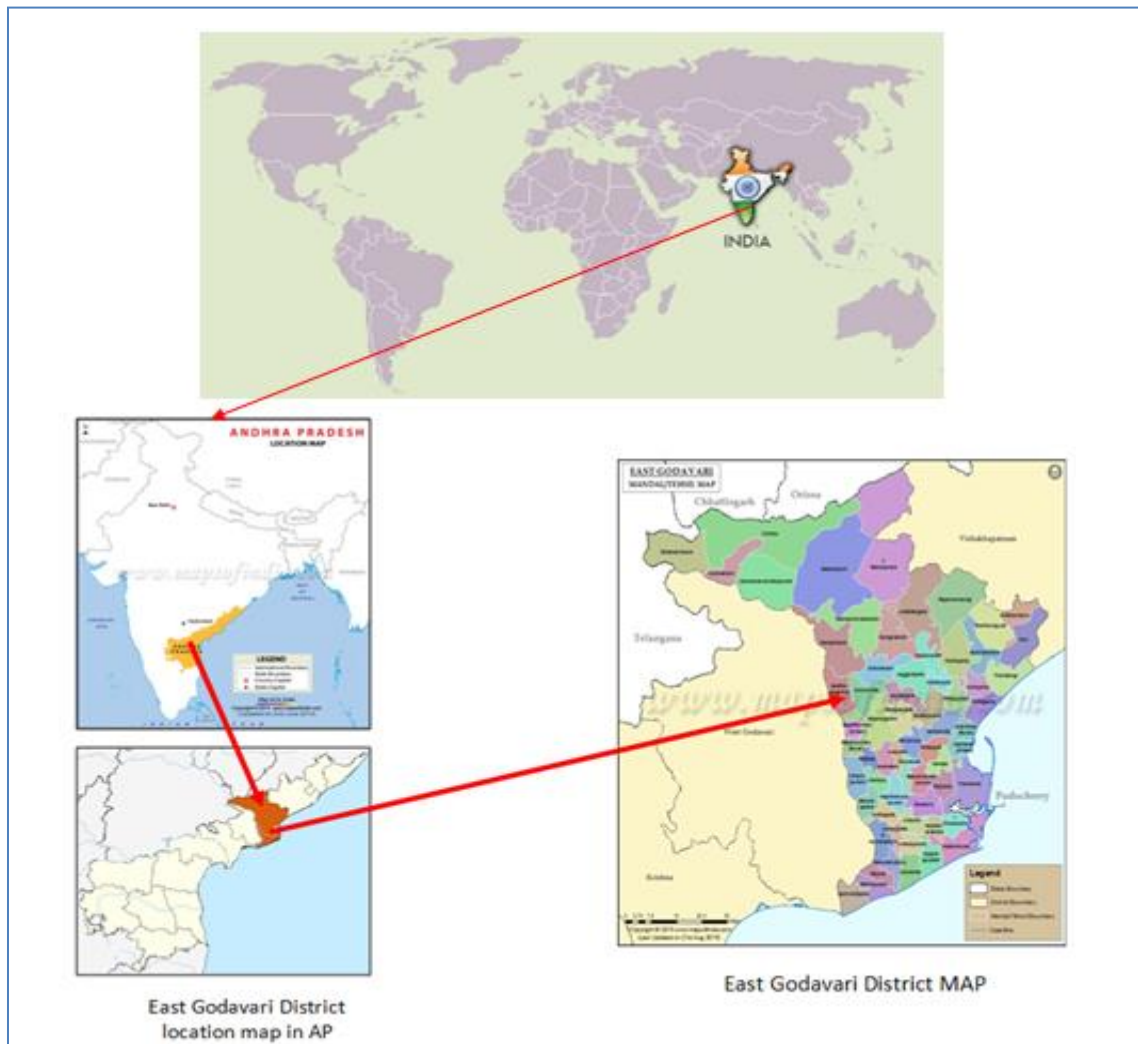


Figure 18: Location of Locale in the Map

The figure shows the location of the locale. The East Godavari district lies between the northern latitudes of $16^{\circ} 30'$ and $18^{\circ} 20'$ and between the Eastern longitudes of $81^{\circ} 30'$ to $82^{\circ} 36'$. It occupies an area of $12,805 \text{ km}^2$. According to the 2011 census, the district has a population of 5,154,296 people. The district headquarters are in Kakinada.

4.2 Research Method and Design of the present study

According to John W. Best (1986), "Research is considered to be the more formal, systematic intensive process of carrying on the scientific method of analysis. It involves a more systematic structure of investigation, usually resulting in some sort of formal record of procedures and a report of results or conclusion" (Best, 1986).

It requires accurate observation and description. The quality of research depends on the research method, the formulation of an appropriate and systematic research design, and the researcher's approach.

The present empirical research mainly involves quantitative methods to find out the effect of meditation on environmental attitudes, academic anxiety and academic performance of secondary school students in India. The questionnaire fall into the field of experimental research as the study focuses on identifying cause and effect relationships between independent and dependent variables. Two matched groups, the Experimental and the Control Group, were used for the questionnaires. The research study took place in the East Godavari district of the state of Andhra Pradesh, India.

In addition to the quantitative study, the writer of this thesis collected secondary data, made field notes, took feedback from students and teachers, analyzed student diaries, and performed literature research to aid in the quantitative analysis.

4.2.1 Classification of the Research

There are different ways to classify research approaches. The classification according to the source or type of data distinguishes between two categories: quantitative and qualitative research is shown in figure 19.

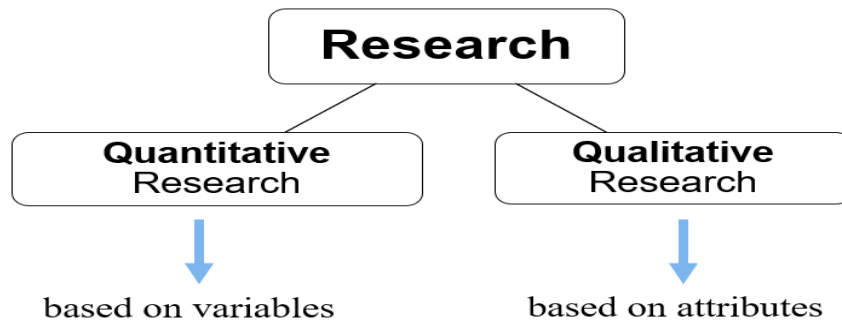


Figure 19: Research classified on the basis of type / source of data

Quantitative research is based on variables. Variables can be measured in units such as height (m), weight (kg) or speed (km / h). Qualitative data is based on attributes. Attributes do not have units of measure. If we want to express the relationships between the values of an attribute, we can arrange them, for example, in percentiles or in ascending or descending order; observation grids can be used and there are methods to quantify qualitative data, for example in interview transcripts important keywords can be counted.

Qualitative methods are often used to explore, expand or narrow the field of research, or to develop hypotheses. Quantitative methods are often used to test hypotheses.

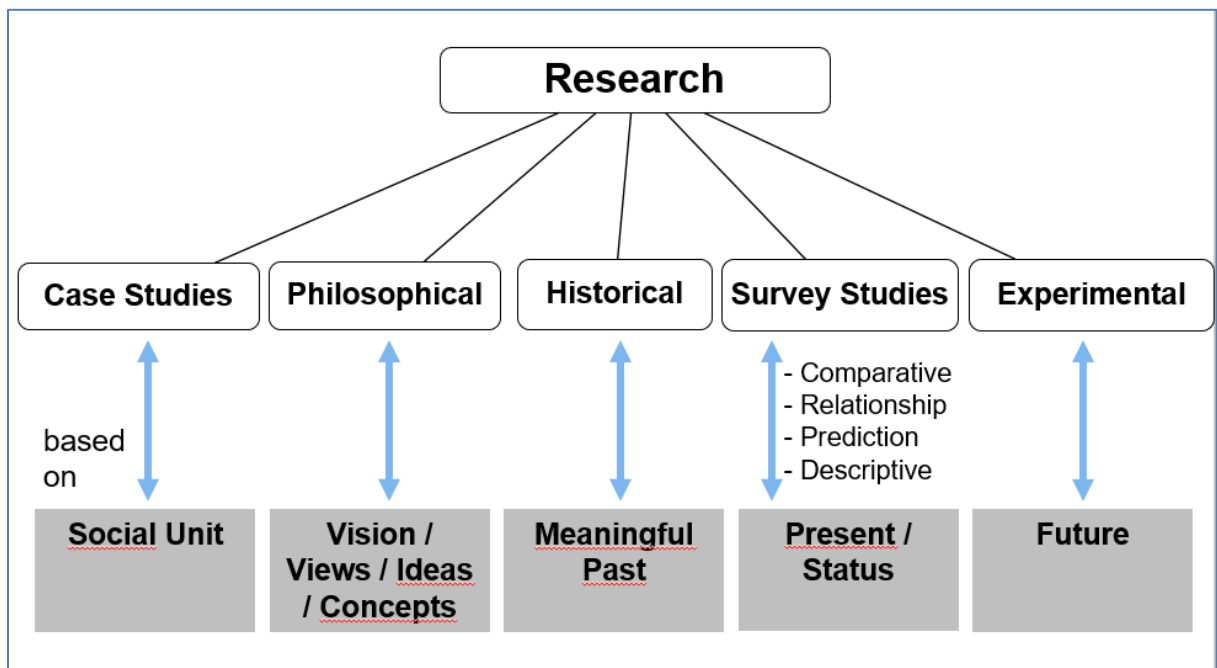


Figure 20: Research classified based on methodology

The figure 20 shows the classification of research based on methodology. Five categories are distinguished.

Case studies are based on social units. The whole study can be centered on any social unit, *i.e.*, caste, class, field, university, company, equipment, school, individual, *etc.* Historical research is done on events, persons, *etc.* in the past that were meaningful once or which aftereffects are relevant for today. Survey studies are often used to compare a variable in different settings. They can be done using various tools to create a relationship between two variables, such as, for example, different marketing strategies and the resulting sales figures on the market or election predictions. The goal is to predict the unknown based on the known. They are also called estimates or prophecy studies.

Experimental research aims to make clear predictions about the future. It aims to find out regular relationships of cause and effect. Therefore, a major concern is how experiments are conducted in order to maximize the effect of the independent variable by minimizing the error variance in the measurement. For example, a research conducted to find out the effect of drug x on decease y. Experimental research is often used to test hypotheses.

4.2.2 Quantitative Quasi-Experimental design of the present study

The design used for the present study was a quasi-experimental research method because the study focuses on establishing cause and effects relationship between independent and dependent variables. It incorporated the quantitative approach. It was a pre- and post-tests experimental group design with a pair wise comparison, which consists of one Control Group (CG) and one Experimental Group (EG). Equal number (n=200) of individuals were assigned randomly to the groups. The treatment was assigned to the Experimental Group; there was no treatment for the Control Group.

The research was conducted at ten selected secondary schools in the East Godavari district of Andhra Pradesh state during the 2018-19 academic year in India.

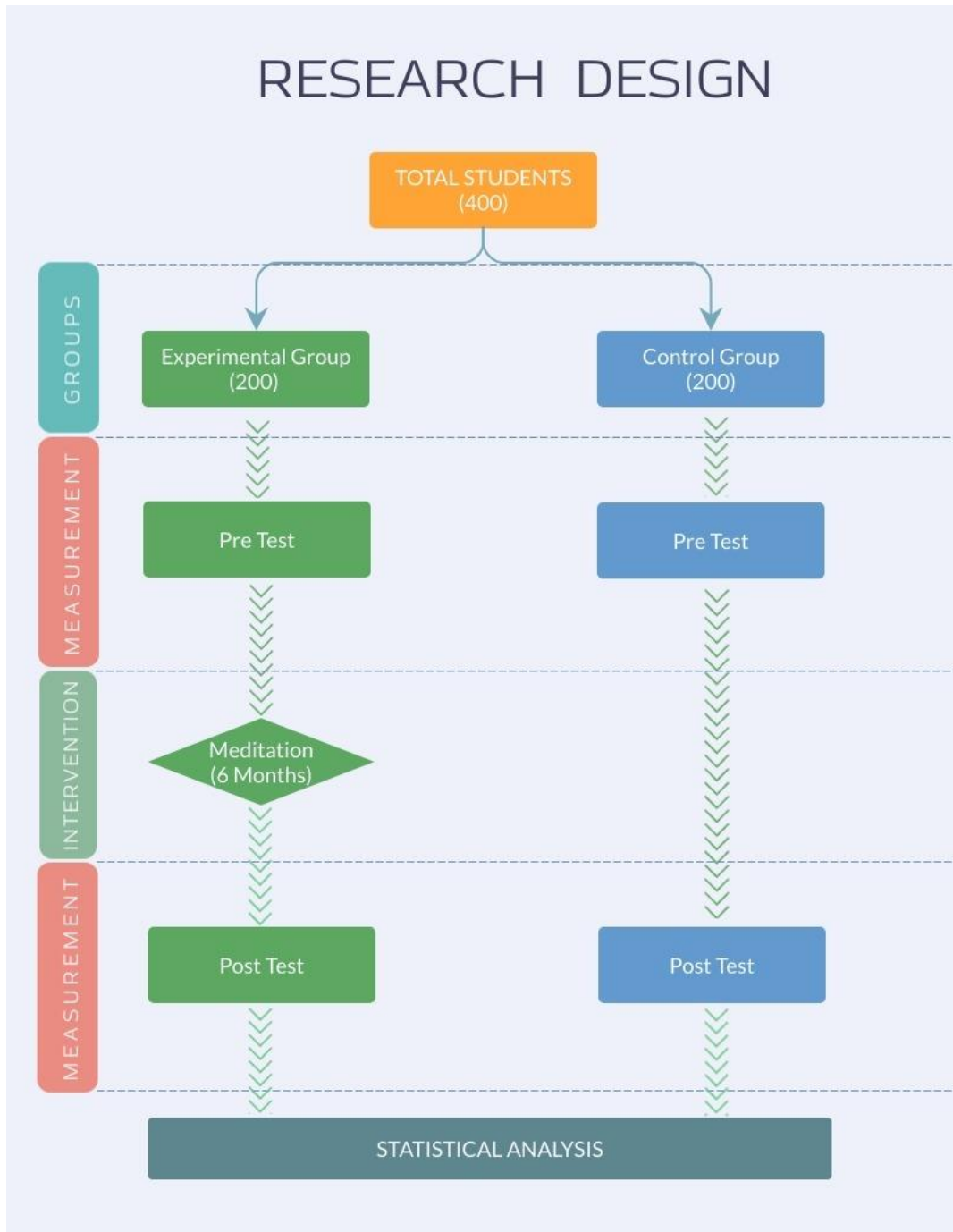


Figure 21: Research design of the present study

The outline of the research design is shown in the figure 21. At the beginning of the research, the investigator carried out the pre-tests for both the students in the experimental and control groups in June 2018 with the help of a team of teachers from the respective schools.

The intervention for the experimental group was imparted 45 minutes of daily practice of Sahaja Yoga Meditation session for six months from July 2018 to December 2018 under the supervision and guidance of the meditation instructor. The meditation instructors were regular and employed teachers of that particular school, teaching their normal subjects, like mathematics, biology, chemistry, etc. Their extra qualification was that they were additionally long time Sahaja Yoga Meditation trainers, with 10 – 20 years of experience in the guidance and instruction of the practice of Sahaja Yoga Meditation. There are regular SYM courses in many cities, they are free of cost, the course instructors do this on a voluntary base.

No meditation practice was imparted to Control Group of students. After the intervention period of six months, in January 2019 post-tests were conducted for both the Experimental and Control Group students. The outline of the research design was given below in the figure.

The experimental group received the intervention (Sahaja Yoga meditation session) for a period of six months (from July 2018 to December 2018) in units of 45 minutes of daily practice²⁴² under the supervision and guidance of the meditation teacher.

The control group of students was not taught any meditation practice. After the intervention phase, follow-up tests were carried out in January 2019 for both the students in the Experimental and Control Groups.

²⁴² Daily means working days of the school which are six days from Monday to Saturday and students were encouraged to practice the meditation at home during the weekend and on holidays.

4.2.3 Action Research

At the same time the study is a type of action research. Action Research has no strict rule of conduct for research. But it follows the idea of Kurt Lewin that there "No action without research; no research without action" (Adelmann, 1993, p. 8). He is considered to be the founder of action research and founder of the cognitive tradition within social psychology in America. "Festinger suggests that it is because Lewin showed how complex social phenomena could be studied experimentally that many regard him as the founder of modern experimental social psychology" (Adelmann, 1993, p. 12-13).

Action science is a very practical approach which does not only aims to examine but also to introduce a change into a social system like work environment or a school that already incorporates the conclusions won through the observation. It stands in the tradition of John Dewey and Kurt Lewin. Dewey argued against "the traditional separation of knowledge and action", instead he had the idea to combine them to create a basis for a change. He had made the "observation, that experimentation in science is but a special case of human beings testing their conceptions in action, [which] is at the core of the pragmatist epistemology" (Adelmann, 1993, p. 12)

It regularly involves the communities which are facing the examined situations, who are directly involved with the examined object or who would benefit or be confronted by the change that is the object of the observation. "Action research aims to build communities of people committed to enlightening themselves about the relationship between circumstance, action, and the consequence of their own situation, and emancipating themselves from the institutional and personal constraints which limit their power to live their own legitimate [...] values" (Kemmis and McTaggart, 1988, p. 23).

Therefore, the involved parties are part of the observation, their own conclusions are not only heard but are essential inputs into self-regulatory systems, which implement what is found good and working and which disregards and neglect what is not working. "Action research for Lewin was exemplified by the discussion of problems followed by group decisions on how to proceed. Action research must include the active participation by those who have to carry out the work in the exploration of problems that they identify and anticipate. After investigation of these problems the group makes decisions, monitoring

and keeping note of the consequences. Regular reviews of progress follow. The group would decide on when a particular plan or strategy had been exhausted and fulfilled, come to nothing, and would bring to these discussions newly perceived problems” (Adelmann, 1993, p. 8).

Out of these self-regulatory processes evolve that lead to a positive change, at the best for everybody involved, as the ones who would be potentially confronted with changes decide and manufacture the change by themselves, at least to some degree. “Experimental action research called for a controlled study of the relative effectiveness of various techniques in nearly identical social situations. Of all the varieties of action research, the experimental had the greatest potential for the advancement of scientific knowledge. Under favorable circumstances it could definitively test specific hypotheses. It was, however, the most difficult form of action research” (Marrow in Adelmann, 1993, p. 14). This means amongst other action research assumes the ability of those involved to participate in the manner described, to reflect and honestly check whether what they are proposing is only on their part, for example only for their small, small workplace in a large factory or for the benefit of the whole.

4.2.4 Sample selection: Selection of Schools and Students for the present study

In the present study is a two-stage sampling was conducted. First, the writer of this thesis selected ten schools for research. The students in the schools selected in this way were then chosen at random for the experiment. The two stages of sampling were the

- Choice of schools
- Selection of students

4.2.4.1 Selection of Schools to conduct the research project

Locale of the study is the East Godavari District in Andhra Pradesh state of India. The schools of the present study were Zilla Parishat²⁴³ High Schools. The name of many Governments Secondary Schools in India and most particularly in the states of Andhra Pradesh and Telangana are Zilla Parishat High Schools (ZPHS). As per the data available, the district had in total 434 Zilla Parishat High Schools in 2010²⁴⁴. These ZPHS schools are local body schools, which are established, supervised, and funded on the district level by local authorities of the state. Zilla Parishat High Schools provide education for students from grades VI to X (age 12 -16).

For the present study ten Zilla Parishat High Schools from ten different locations were chosen out of 6 mandals²⁴⁵, namely Ambajipeta, Mamidikuduru, P. Gannavaram, Rajahmundry, Razole and Sakhinetipalli. These ten schools were selected by using the purposive sample technique. The main criteria to select the school was the availability of the teacher, who practices meditation and are able to provide the meditation classes for six months to the selected Experimental Group of students voluntarily.

At the beginning of the research project, the writer of this thesis explored the schools in the East Godavari District and got the contact details of the school staff and tried to establish contact with the schools. The possibility of conducting the research in these schools was examined by determining the availability of teachers who could voluntarily provide meditation classes for the selected students for the entire research period and making a list of all such teachers.

We then contacted the teachers individually, who have knowledge and experience in Sahaja Yoga meditation and who can offer meditation courses for the students and

²⁴³ Zilla Parishats are District level local authorities of states. Zilla means District in Telugu language. Telugu is the official language of Andhra Pradesh and Telangana states in India.

²⁴⁴ The newest data available from the district headquarters are from 2010. Therefore, schools from the four new mandals, which were recently added because of the state separation in 2014 were not included.

²⁴⁵ Mandal means subdistrict. India uses plethora of terms like mandal, circle, subdivision, tehsil, taluk to denote the subdistricts in the administration across its 28 states and 8 union territories.

explained the details of the project to them. The teachers then contacted their school principal to discuss the possibilities of organizing the research project in their schools and put the writer of this thesis in contact with the school principal. The initial number of schools was thirteen, of which ten schools have agreed to participate.

After completing the schools, all selected schools were personally visited for the inquiry. We met individually with the school principals and teachers to explain the research project in detail. The purpose and procedure for carrying out the research were explained. Then the students sampling was done.

To further advance the research project, we received official permission from the District Education Officer (DEO) of the East Godavari District to conduct the research in selected schools without affecting their school schedule. For reference, the copy of the DEO letter of consent was sent to the directors of the selected participating schools.

Each school was given a code number for analysis purposes. A list of the schools with its code number, location and the teacher-in-charge for the research project is given below in the Table 4.

Table 4. List of the selected schools' code and location

S.No.	School Code	Location of the School
1	901	Adurru
2	902	Ambajipeta
3	903	Appanpalli
4	904	Chintalapalli
5	905	Kesavadasupalem
6	906	Mamidikuduru
7	907	Nagullanka
8	908	Ponnamanda
9	909	Rajahmundry
10	910	Razole

4.2.4.2 Selection of student's sample for Experimental and Control Groups

The selection of the sample for the research purpose is a very important task. The composition of the sample and the way the sample is selected determines in how far the results of a particular research can be extra polarized on further parts of the population or not. There are some basic rules and procedures that were developed in the history of research.

Sampling is the process of selecting several individuals for a study in such a way that the individuals represent the larger group from which they were selected (Gay, 1996). The target of the sampling procedure is to select a representative sample for the experimental study by giving, for example, the same importance to boys and girls (gender) or to some religions or socio-economic status. Another factor is the size of the sample. Small samples for example are always considered to be non-representative.

For the current study ten schools were selected. In each school there were around 300 students studying at different levels from class VI to class X (age 12-16). Based on the suggestions of school personnel, the ninth-grade students (age 13-15 years) were chosen as a suitable target group for the research project. Factors such as the age, activity and expressiveness of the students were decisive for the decision. Involving 10th grade students was out of the question, as these students had to prepare for their final exams and were therefore felt by the teachers to be unsuitable for this project. Each grade level has several classes²⁴⁶. From the 9th grade level of each participating school, one class was randomly selected as the Experimental Group and one class as the Control Group. Parents' consent was also obtained to enable their children to participate in the research project.

²⁴⁶ When a grade level has really many students, the school divides the level into several subclasses such as Grade IX-A Section, Grade IX-B Section, and Grade IX-C Section and teaches them separately. Usually, each class is divided into two and sometimes three subsections, depending on the number of students in each class.

This process resulted in ten participating schools²⁴⁷ and a total sample of 400 consisting of 200 boys and 200 girls aged 13 to 15 years. The average age is 14.2 years. The sample of 400 students was divided into two equal groups of 200 students, which form the Experimental Group (EG) and the Control Group (CG). The sample shall be representative for all grade IX students studying at state secondary schools in the East Godavari district of the state of Andhra Pradesh in India, which is considered to be the “total population” of the present study.

4.2.5 Variables of the present study.

Variables are conditions or characteristics that the experimenter manipulates, controls, or observes (Best & Khan, 2009). A variable can change its value and be measured. In an experimental study it can either be classified as an independent variable or a dependent variable.

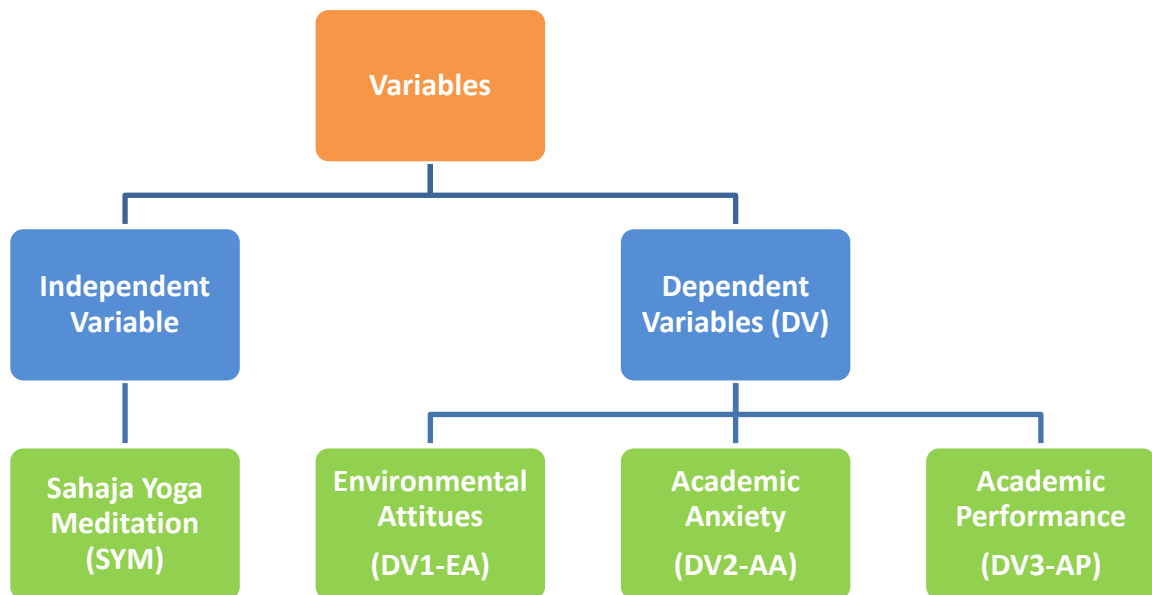


Figure 22: Independent and dependent variables of the present study

²⁴⁷ Each school was given a code between 901 and 910 for the processing of the data, also the students were given numbers from 1-400.

The figure 22 shows the selected variables for the present study. The present study is designed to find out the effect of meditation on environmental attitudes, academic anxiety and learning outcomes of the secondary school students. Therefore, there are one independent variable and three dependent variables. Meditation is classified as the independent variable and the dependent variables are environmental attitudes, academic anxiety, and academic performance.

4.2.6 Design of the Intervention

The Sahaja Yoga Meditation program for the students of the Experimental Group was designed as a research project for six months. Sahaja Yoga Meditation sessions were conducted for 45 minutes per day from Monday to Saturday²⁴⁸ from July 2018 to December 2018 for the students from the Experimental Group²⁴⁹. Meditation courses were scheduled from 9.15 a.m. to 9.45 a.m. before regular school operations began. Normal regular school hours are from 10 a.m. to 4 p.m. with an hour's lunch break in between.

The students were randomly selected for the experiment as follows: First, a request was made to find suitable schools that were willing to take part in the project. Most of these schools had two or three classes in grade nine. From these, a lot was drawn to select which class would become the Experimental Group and which the Control Group. Languages used to conduct the meditation classes were both English and Telugu.

At the beginning of the meditation classes, the structure of the course as a research project with pre- and post-test design was explained. Then all the pre-tests were done before starting with the intervention of Sahaja Yoga meditation. In the first intervention session, an explanation of the subtle system, the three channels, and its seven main energy centers was given. The aim of the meditation – reaching the state of thoughtless of awareness (to reduce thinking process) – was also explained. Following the introduction, the first collective meditation was done. The follow-up sessions consisted each of a

²⁴⁸ During the working days of the school.

²⁴⁹ Usually, the meetings were scheduled for the morning hours. If for some reason it was not possible, afternoon sessions were held. For example, on exam days or special occasions like Independence Day, sports competitions, etc., they slightly changed the schedule for that day at will.

collective meditation and an explanation of the employed techniques and its effects on an individual. Each session had a main topic like balancing and working with the five elements of earth, water, fire, air, and ether/sky.

In addition to practical meditation sessions, scientific findings and theories on meditation were presented and discussed. During the enquiry period, the writer of this thesis discussed and communicated with the entire teaching team regarding course structure, process, content, etc. Uniformity in the conduct of meditation teaching was maintained in all ten schools selected to maintain the standard and quality of research.

At the beginning of the research, students were informed about their meditation experience and encouraged to keep a journal. We urged participants to be honest, sincere, and transparent in their texts. Once a month these diaries were viewed by their respective meditation teacher. The teachers provided the students with the necessary guidelines, motivation, and encouragement to keep their journals regularly. Occasionally, students were reminded of this when needed. The students were made aware of and agreed that their feedback may be used to prepare this thesis.

Summary

In this chapter the theoretical presentation of the present research work was described. It presents the objectives, hypotheses, research questions, location and significance of the present study. A quasi-experimental research design was used with an emphasis on the quantitative approach. A total of ten state secondary schools in East Godavari District of Andhra Pradesh were selected for this study. The Sample size is 400, out of 200 randomly selected students for the Experimental Group and 200 randomly selected students for the Control Group.

5 Materials used for the Data Collection and the Construction of Data

5.1 Materials used for Data Collection.

A demographic form was developed and used to collect the basic data of the participating students. Basic information on name, class, age, gender, name of the school, location, educational qualifications of parents, occupation of parents, family type, family size, family income, eating habits and religion, etc.

In order to measure the level of the three selected dependent variables of the selected subjects, related information was obtained using different materials. Materials used to collect the data for this study were questionnaires and the school examination results of the selected students.

5.1.1 Questionnaires

Questionnaires are considered to be one of the best known and most popular data collection tools. They are most commonly and widely used in social science research. "A questionnaire is not just a list of questions or a form to be filled in. It is essentially a measurement tool, an instrument for the collection of particular kinds of data" (Oppenheim, 1992, p.10). It is an important instrument of research and tool for data collection.

"Questionnaires offer an objective means of collecting information about people's knowledge, beliefs, attitudes, and behavior" (Boynton & Greenhalgh, 2004, p. 1312). It is a method to collect the data in written format directly from the participant. Most questionnaires transform the content information into a numerical form as quantitative data.

Questionnaires can be created by researchers depending on the purpose, aim and needs of the specific research, or they can be selected from a list of pre-existing questionnaires that have been previously validated.

In order to collect the relevant data in the present study, we reviewed the literature in the respective areas to examine whether the existing validated questionnaires were appropriate for the field of the present study and used two standard questionnaires to measure two of the dependent variables of the present study.

The questionnaires used to measure the Environmental Attitudes (DV1-EA) and the Academic Anxiety (DV3-AA) are:

- 1) Taj Environmental Attitude Scale (EAS) developed by Dr. Haseen Taj was used to study the attitude of students towards the environment (Taj, 2001).
- 2) Academic Anxiety Scale (AAS) developed by Dr. Mohd. Abid Siddiqui and Dr. Atieq Ul Rehman was used to study the anxiety of students regarding academics.

Both questionnaires have been validated and published by the stated authors. Before settling on these questionnaires, the researchers reviewed and went through various stages of optimizing their questionnaires to decide what exactly is relevant and appropriate to gather the information needed and required.

5.1.1.1 Environmental Attitude Scale (EAS)

The measurement of attitudes towards the environment has become the best-known field in environmental psychology, because how the individual understands nature or the environment and how the individual reacts or behaves towards the environment and how much an individual contributes to the environment together with individual beliefs, attitudes and environmental concerns play a large role in the collective environmental paradigm. Hence, researchers, educators, environmental sociologists, and policy makers are showing great interest in this area.

Attitudes are hidden in the individual's inner world. Therefore, direct self-disclosure methods such as interviews and questionnaires are mostly used to measure attitudes. While implicit measurement techniques (e.g., observation, priming and response competition measures) place very high demands on the survey and the surveyor.

Therefore, they are used less often (Krosnick, Judd and Wittenbrink, 2005; Milfont and Duckitt, 2010).

It was chosen to evaluate the data through self-disclosure questionnaires. And to underpin the knowledge gained from these additionally with observations made by the teachers.

To construct a questionnaire is a demanding task and many times a complete research work as such. Investigators from diverse fields contributed their time, efforts, and concerns in developing the measures to assess the extent to which individuals personally value the aspects of the natural environment (Clayton and Opatow, 2003; Schultz, 2002; Amburgey and Thoman, 2012). There are many advantages to using standard questionnaires. It is less work, they are tried, recognized and measure what they are supposed to measure. If it is a prominent questionnaire and an application in a prominent research field, the results of different research papers can be compared more easily.

The present study was carried out to examine the environmental attitudes of secondary school students in Andhra Pradesh, India towards the environment. The scale used has to fit to the research group in sociodemographic and cultural aspects. After going through the number of environmental scales and comparing the selected scales, taking into account the existing areas, designed age group, country, etc., we selected the "Taj Environmental Attitude Scale (EAS)" as a direct self-report questionnaire for the present study.

EAS was developed by Haseen Taj in 2001. The scale deals with six subdimensions of Environmental Attitudes: Population explosion, Health and Hygiene, Polluters, Wildlife, Forests and Environmental concerns. The numbers of items were reduced, modified, and rearranged from originally 94 to finally 61 items, after discussions with subject experts and try-out runs.

Table 5. Details of the total selected items with their serial numbers distributed over different areas with their natures in EAS.

S. No.	Areas	No. of the Items		Total no. of items in each area
		Positive nature	Negative nature	
1	Health and Hygiene	46, 52, 61	3, 59	5
2	Wildlife	54	18, 19, 26, 56, 58	6
3	Forests	---	5, 33, 48, 53, 55	5
4	Polluters	15, 21, 25, 29, 30, 31, 40, 41, 42, 43, 44, 45, 47, 57	1, 8, 12, 16, 17, 20, 22, 24, 27, 28, 34, 50	26
5	Population Explosion	2, 4	6, 9, 35	5
6	Environmental Concern	7, 10, 11, 13, 14, 23, 32, 37, 49, 51, 60	36, 38, 39	14
	Total:	31	30	61

The table 5 shows the numbers of the items of each subcategory of Environmental Attitudes (Health and Hygiene, Wildlife, Forests, Polluters, Population explosion and Environmental concerns). It differs between positive and negative formulation (“nature”) of the questions or statements of the questionnaire and lists the sum of each item. The number of questions for each item determine the number of reachable points for each category. The category “Polluters” has the largest number of items (26), followed by “Environmental Concern” with 14 questions, while “Wild Life” has 6 items and “Health & Hygiene”, “Forests” and “Population Explosion” each 5 items.

Table 6. Scoring system of Environmental Attitude Scale

Sr. No.	Type of Items	Strongly Agree	Agree	Disagree	Strongly Disagree
I	Positive	4	3	2	1
II	Negative	1	2	3	4

The table 6 shows the scoring system for agreement/ disagreement to the 61 items of the EAS scale, depending on the positive or negative formulation of the item. Out of this results a minimum possible score of 61 and a maximum possible score of 244.

The validity of the scale was tested and reassured; for the content validity by the expert check, the item validity was checked with the t-value of each item and the scale validity

through computation of the Mean scores for different groups. The cross validity and the intrinsic validity were determined by a parallel scale with a different wording of the items. The test-retest reliability was tested by Taj, with 0.6 and an index of reliability of 0.77 for a 30 days gap between pre- and post-test.

For the interpretation of the level of the environmental attitude measured through the test-result-values different Stanine grade norms²⁵⁰ were developed for gender, occupational status, and age/educational status.

Table 7. Ranges of raw scores for Stanine Grades for adolescents (14-18), class 8-12 standard students

Stanine Grade	Level of Environmental Attitude	from score	to score	from %	to %	width of the Interval
9	Extremely High	205	223	88.3%	99.4%	11.0%
8	High	187	204	77.3%	88.3%	11.0%
7	Above Average	169	186	66.3%	76.7%	11.0%
6	Average	151	168	55.2%	65.6%	11.0%
5	Average	133	150	44.2%	54.6%	11.0%
4	Average	115	132	33.1%	43.6%	11.0%
3	Below Average	97	114	22.1%	32.5%	11.0%
2	Low	79	96	11.0%	21.5%	11.0%
1	Extremely Low	61	78	0.0%	10.4%	11.0%

The table 7 shows the stanine grade norms for the raw scores of the Environmental Attitude Scale (DV1-EA) for class 8-12 students. The 5th stanine includes the mean of the reference group. The level of positive attitudes towards environmental issues²⁵¹ within this 5th stanine grade are considered to be average.

²⁵⁰ Stanine grade norms have the normal distribution divided into nine intervals. The mean is in the center of the fifth interval. Each interval has a width of 0,5 standard deviations, except for the interval I and IX which include the tails of the distribution, meaning all scores below or above the border. Stanine (Standard nine) grade norms have been developed for EAS for male and female population, occupational status, age and educational studies.

²⁵¹ The environmental and socio-cultural context of India is embedded in the wording of the statements / questions of the questionnaire.

The EAS questionnaire was chosen as a well-tested tool, appropriate for the targeted research group. It offers the disclosure of six different dimensions of environmental attitudes, which may lead to further insights about the inner world of the tested individuals. The resulting data will be enormous (400 students x 2 test times x 61 items = 48.800 data values). Through sophisticated statistical methods they will be condensed into a few data values with a high informative value and predictive potential.

5.1.1.2 Academic Anxiety Scale (AAS)

The writer of this thesis used this scale to assess the academic anxiety of secondary school students. There are several scales and tests available for measuring the academic anxiety of students. This scale was chosen, because it is standardized measurement tool of academic anxiety for adolescents' population (14-19 years), in India. The Academic Anxiety Scale (AAS) is suitable for the selected sample for assessing academic anxiety of secondary school students, in particular 9th class students in the present research.

The AAS measures six dimensions of academic anxiety, viz., academic anxiety symptoms, anxiety from poor study habits, anxiety from subjects, anxiety from school environment, anxiety from teachers and anxiety from examinations These six dimensions of academic anxieties are defined as follows: (Siddiqui & Rehman, 2017).

1. Academic anxiety symptoms: Some students having the postponement or procrastination attitude in academic activities, worrying most of the time, perform poorly in schoolwork, fail classes, and withdraw from socializing with peers of pursuing activities that interest him/her leads to academic anxiety.

2. Anxiety from poor study habits: Anxiety caused by learning strategies applied by students in their daily academic tasks. Students, who are unable to manage their regular study habits fail to complete their academic tasks like homework, class work and preparing for the class tests, etc., Poor study habits leads the students to get poor grades in studies. The disability to manage their proper study habits also leads to anxiety.

3. Anxiety from subjects: Every student does not like every subject. They have special interest in some subjects, which will become their favorite subjects and no interest in some subjects, which are going to be their boring subjects. Besides these two some students be afraid for some subjects. For example, it may be mathematics, or science, or English or other. It is different to every individual and that fear leads to a negative attitude. Possessing negative attitude towards a particular subject or different subjects due to one or the other reasons. Anxiety caused by it is called anxiety from subject's study.

4. Anxiety from school environment: Usually there is a competition among the students. A healthy competition among the students in the school environment, be it in the academics, sports or in the extra-curricular activities, motivates and inspires the students. But when this competition gets tougher, it also leads to stress and anxiety among students. Fear and stress caused by such a school environment with strong competition among students and role of school administration (authoritarian/ democratic) is called anxiety from school environment.

5. Anxiety from teachers: Some teachers are role models for some students, on the other hand, some students are afraid of some teachers. This unconscious fear of the students also leads to anxiety. Partial attitude of teachers inside the classroom also provokes academic anxiety among students. Anxiety occurring due to this phenomenon is called anxiety caused by teachers.

6. Anxiety from examination: Even some of the well learned students forget things in exams because of fear or stress. The introduction of new examination schemes can lead to severe anxiety among students due to the new and unknown pattern of the examinations. Anxiety caused due to exams type is called anxiety from examination.

The authors of the questionnaire reduced the numbers of items, modified, and rearranged them from originally 70 to finally 44 items, after discussions with subject experts and a pilot-study. The details of the total selected items with their serial numbers distributed over different dimensions with their nature in AAS are given in the following table.

Table 8: Details of the total selected items with their serial numbers distributed over different dimensions with their nature in AAS

S. No.	Areas	No. of the Items		Total number of items in each area
		Positive nature	Negative nature	
1	Academic anxiety symptoms	5, 6, 7	1, 2, 3, 4	7
2	Anxiety from poor study habits	12, 13, 14	8, 9, 10, 11	7
3	Anxiety from subjects	18, 19	15, 16, 17	5
4	Anxiety from school environment	24, 25, 26	20, 21, 22, 23	7
5	Anxiety from teachers	33, 34, 35	27, 28, 29, 30, 31, 32	9
6	Anxiety from examination	42, 43, 44	36, 37, 38, 39, 40, 41	9
	Total:	17	27	44

The table 8 shows the numbers of the items of each subcategory of the Academic Anxiety Scale, it differs between positive and negative formulation (“nature”) of the questions or statements of the questionnaire and lists the sum of each item. The number of questions for each item determine the number of reachable points for each category. The category “Anxiety from teachers” and “Anxiety from examination” have a slightly larger number of items (9), while “Academic anxiety symptoms”, “Anxiety from poor study habits” and “Anxiety from school environment” have 7 items each, and “Anxiety from subjects” has with 5 the lowest number of items.

The validity of the scale was tested and reassured; for the content validity by the expert check, the item validity was checked by item analysis and only items with a minimum “r”-significance of 0.5 remained in the final scale. The reliability was tested with the split-half method (odd-even) and was found highly significant with $r=+0.85$ at a significance level of 0.01 for $N=600$.

Table 9: Scoring System of AAS

Sr. No.	Type of Item	Agree	Undecided	Disagree
I	Positive	1	2	3
II	Negative	3	2	1

The table 9 shows the scoring system for agreement/ disagreement to the 44 items of the EAS scale, depending on the positive or negative formulation of the item. Out of this results a minimum possible score of 44 and a maximum possible score of 132.

Table 10. DV2-AA ranges of raw scores for adolescents (14-19 yrs.), class 8-12 standard students

Serial No.	Level of Academic Anxiety	Grade	from score	to score	from %	to %
7	Extremely High	A	102	132	65.9%	100.0%
6	High	B	93	101	55.7%	64.8%
5	Above Average	C	83	92	44.3%	54.5%
4	Average	D	69	82	28.4%	43.2%
3	Below Average	E	59	68	17.0%	27.3%
2	Low	F	49	58	5.7%	15.9%
1	Extremely Low	G	44	48	0.0%	4.5%

The table 10 shows the range of raw scores for the Academic Anxiety Scale (DV2-AA) with a labelled level of Academic Anxiety. The levels were determined by the authors of the questionnaire using standardized z-scores.

5.1.2 Academic Reports of the students

Academic Performance (AP) is the third dependent variable (DV-3) in the present study. It is also known as academic achievement. To measure the Academic Performance (DV3-AP), we collected the academic reports of the selected students of their school examinations. Academic reports have the academic results, more precisely the marks achieved by the students in different subjects of their school examinations.

There are 6 subjects in total, namely math, general science, social studies and three languages - Telugu, Hindi, and English. General Science is a combination of physical sciences (PS) and natural sciences (NS). Physical science is again a combination of

physics and chemistry together. The students learn geography, history, political science, and economics together in one subject called social studies.

Indian secondary schools incorporated the three-language policy²⁵². Students learn three compulsory languages until the end of their secondary school examinations. Telugu is the mother tongue; Hindi is the national language of India and English is the international language.

During the school exams, the exam is taken separately for each subject. These examination papers are assessed by their respective subject teacher and all results are made available to the student / parents through the certificate. The certificate lists the grades achieved by the students in each subject, the overall grades achieved. It also shows the grading system and associated points based on the grades received.

The writer of this thesis recorded the percentage of the overall grades that the selected students had received in their annual and semi-annual exams at their respective schools. These were used as pre-test data at the beginning of the study, in June 2018, and as post-test data after six months of the intervention, in January 2019, from students in the Experimental and Control Group. They were taken from their respective school records with the help of the local teachers in-charge of the research.

5.1.3 Socio Demographics factors of the selected sample

Socioeconomic status plays an import, vital, and crucial determinant for an individual in different aspects and phases of the life in their family and society as well. "Socioeconomic status is a measure of an individual's or family's economic and social position in relation to others, based on various variables responsible for that like income, education,

²⁵² The three-language formula was implemented by the National Education Policy, in 1968, across India, it was supported and incorporated in the later major educational policies, in 1986 and 2020, as well. India has 28 states, and every state has its own language. It is true that two Indians, from different states, who knew only their mother tongue, cannot communicate each other because of the language hurdle. The main purpose of the three-language policy is to promote the inter-state communication, accommodating group identity, affirming national unity, and increasing administrative efficiency.

occupation, family effluence, physical assets, social position, social participation, caste, muscle power, political influence, etc. (Gaur, 2013, p. 139).

Socioeconomic status is an important determinant of education achievement (Hedges *et al.*, 1999; Battle, 1999; Battle & Scott, 2000, Battle & Lewis, 2002). Economically established parents can afford to send their children in a good school. On the other hand, economically poor families struggle for their survival. Therefore, their efforts and acquirements only fulfill their primary needs of the entire family. “High socioeconomic status students have parents who can afford to allocate resources to those endeavors that increase the likelihood that their children will do well in school” (Battle & Lewis, 2002, p. 23). Well educated parents can guide and motivate their children to set a high goal, and they can help them to achieve their goals. A positive relationship between socioeconomic status and achievement is often implicated in predicting educational outcomes (Hedges *et.al.*, 1999; Battle & Lewis, 2002).

In the present study, we collected the demographic information by using a self-prepared questionnaire. It included the basic information of the student like person code, gender, class-section, school, city; educational-socio-economic status of the family like educational qualification of parents, occupation of parents, type and size of family, income of the family, food habits, caste and social status and religion. Family plays an especially important role for every individual from his/her childhood. It is the first and foremost social environment for an individual. “Family with its physical, intellectual and emotional aspects shapes a child's life in his journey towards self-fulfillment” (Grewal, 2014; Khatun, 2018).

In the present study, almost all families are economically middle class or lower middle-class families. Almost all of the parents in the total sample only had a basic school education; very few of them had a university degree or a diploma. Most of the fathers work in the private sector and almost all mothers are housewives, few of them tailoring at home and some mothers are teachers. Most families have a Hindu religious background. However, some families are converted Christians.

The total sample of 400 students was collected from state high schools in the rural areas of East Godavari district. The sample of private schools from cities and metropolitan areas

was not included in the present study. Therefore, the socio-economic status of families is more or less the same for the whole sample and therefore there is not much leeway in the present study to compare these variables for the selected sample.

5.2 Data Collection processing

5.2.1 Quantitative data collection

To collect the data for the present study, the writer of this thesis visited each school. The students were addressed, the aim and purpose of the investigation explained, and they were asked to answer each statement truthfully. The data was collected from the students in the Experimental and Control Groups in two phases. The pre-test data was collected at the start of the pre-intervention study in June 2018, while the post-test data was collected after the six-month intervention in January 2019.

The data for the two dependent variables Environmental Attitude (DV1-EA) and Academic Anxiety (DV2-AA) was collected through standard questionnaires to assess the effect of meditation on them. Necessary instructions were given to the students before the administration of the questionnaires. The PhD. researcher assured the confidentiality of their responses. The students were asked to read the questions and statements carefully and to provide their responses honestly. Further clarifications were given on the questions, doubts and confusions raised by them. Students were instructed to give back the materials with appropriate responses and requested to cooperate for successful completion of the research. There was no time limit to complete the questionnaires, it took around half an hour to complete all the questionnaires. After completion, the questionnaire was collected from the students.

To measure the Academic Performance (DV3-AP), we collected the academic reports of the selected students at their school examinations. The certificate indicates the grades achieved by the students in each subject and the overall grade. It also shows the grading system and related points based on the marks obtained.

5.2.2 Collection of Testimonies from Students and Teachers

Testimonies directly from the students and the teachers from the selected schools was collected. Students provided their feedback in the written form as diaries. The teachers provided their feedback during their interactions with the Writer of this thesis during the field trips and during their conversations; Detailed notes of these conversations were made and maintained about.

In the beginning of the research, the students were informed to maintain a dairy regarding their meditation experience. We requested the participants to be honest, sincere and transparent in their writing. Once in a month, these diaries were controlled and checked by their respective meditation teacher. The teachers gave the necessary guidelines, motivation, and encouragement to the students to write their diaries on regular basis. Occasionally reminder was given to the students, if necessary. The students were made aware of the fact that their feedback will be used to write in the thesis as part of the research analysis, under operating conditions that respect their anonymity.

At the end of the intervention the diaries were collected from the students and handed over to the PhD. researcher. During her fieldwork, it has been requested the students to provide their feedback regarding their experience in this research project. The researcher made detailed notes of this feedback. The students also provided a written feedback sheet to the writer of this thesis. Some of the students expressed their views, experiences, and joy directly during their classroom interactions with the writer of this thesis.

The teachers were asked to take notes about their observations. At the end of the project there was a large feedback round organized.

Summary

For this study quantitative data was generated through two standard tests that were chosen as fitting to the Indian school setting. To measure the Environmental Attitudes (DV1-EA) as an example for a sustainable attitude the Taj Environmental Attitude Scale (EAS), developed by Dr. Haseen Taj (2001) was used and to measure the anxiety of students regarding academics (DV2-AA) the Academic Anxiety Scale (AAS) developed by

Dr. Mohd. Abid Siddiqui and Dr. Atieq Ul Rehman was used. For the evaluation of the Academic Performance (DV3-AP) the academic reports of the students were chosen. The socio-demographic factors were capture by a self-constructed form.

Additionally, to gather qualitative data, about the respective variables but also to collect additional effects and impressions of the action research project, the students were asked to write diaries with their impressions about their meditational experiences. The teachers were asked to write notes about their observations during the project. At the end of the projects a large feedback group meeting was organized.

6 Statistical methods used for the data analysis and explanation to choose the data analysis approach.

The test sheets were evaluated and later stored with EXCEL, Microsoft Office Home and Microsoft Office Student 2016 on a Lenovo Ideapad 310. For the statistical analysis the data was then transferred to SPSS 25. Some charts were created with EXCEL.

The Analysis of the quantitative data was done in the following order.

6.1 Appropriateness of the sample - ANOVA

First it had to be found out, if the test-group (consisting of 20 classes with approx. 20 students each, located at 10 different schools in the district) is an appropriate sample and can be considered as one test group or if there is a significant difference between the 10 different schools. This will affect the further analysis procedures or could even led to the necessity of choosing the new sample. The alikeness of the classes of the different schools as well as the alikeness of the Experimental Group and the Control Group can be found out by an Analysis of Variance (ANOVA). The ANOVA procedure compares the means of more than two groups – in the present case the ten schools. ANOVA is an extension of the t-test (which compares two groups). The result of this ANOVA will determine the way in which the analysis of the dependent variables has to be done – for different groups or for one group with $N=200$ for the Experimental Group and $N=200$ for the Control Group.

If the later was the case, it would bring the necessity of remodeling the samples therefore, after the general appropriateness of the sample is confirmed, the three dependent variables (DV1-EA, DV2-AA, DV3-AP) were analyzed with the same procedure.

6.2 Choosing the method of comparison of pre-test data and post-test data

For the three dependent variables, the same procedure was run through. At the beginning of the research data was collected²⁵³ from the Experimental Group and from the Control Group, this we called the pre-test. Then the Experimental Group had an intervention with regular meditation sessions for the period of six months, while the Control Group had no extra activity. After that time for both groups the same tests were taken again.

The basic idea behind this set-up is to compare the tests taken before the intervention with the tests taken after the intervention. The difference between the results of pre- and post-test then can be (more or less) interpreted as the effect of the intervention. To make sure that the change between pre- and post-tests would not have occurred anyway there is a Control Group, that does not get the intervention. From a first thought the Control Group should show no change in the outcomes of their tests before and after, as for the Control Group there is not before and after, there are only time t1 and time t2 where the same test is taken and if the test is reliable, it should produce the same outcome with the same group. But when students write the same test two times there can be bias to the results caused by learning effects. The students may also understand the questions differently at two points in time. Or students may be bored by the test. Other biases can come from outside²⁵⁴. The possibilities of external factors are quasi unlimited. In field research external factors, that are not controlled or examined by the research setup, are common. And this external factor may influence one group or both groups. The aim of a research set-up in general is to minimize external influences as far as possible and at the same time find and use analysis methods that reduce or at least calculate and consider possible unknown influence factors.

²⁵³ For DV1-EA and for DV2-AA the data collection was done with the help of standardized questionnaires, that were bought from a third party. For DV3-AP the exam-notes of the students were collected from their respective teachers.

²⁵⁴ Something extremely positive may happen in between, for example, the national or local team wins or loses an important tournament, or extremely bad or good weather conditions at one of the test-times all such external happenings can have an impact on the mood of the individuals and on the test-results, especially when psycho-sociological contents are tested.

Statistical tools have been elaborated and are used by exceptionally large parts of the scientific community when it comes to field of research. For the comparison of test results there is a wide range of approaches that can be chosen. The tools differ in their possibilities of comparison, the quality of their results as well as in their preconditions that have to be fulfilled by the data.

A dependent T-Test²⁵⁵ calculates, if there is any significant difference between the pre-test and post-test scores. Basically, it works with the gain or loss in scores from the two test points in time for the tested individuals and gives statistical relevant data as an output. The “means” show the average test score value of the sample, the “variance” indicates how the individual values vary from the mean score and the “t-test value” compared to the “significance level” informs us, if these values can be considered significant²⁵⁶ or not²⁵⁷.

One could be fine with the results of that before-after comparison of the t-test, but many researchers consider this simple examination: For the comparison of before-after test setups, “there is a longstanding controversy, that whether to use “t-test” on the “gain” scores (gain defined as post-test minus pre-test) vs. an analysis of covariance (ANCOVA) with group as the principal independent variable, with the post-test score as the dependent variable, and with the pre-test score as the covariate” (Knapp, 2009, p. 1). “The principal arguments against the gain score approach (and for ANCOVA) is that the simplicity is deceiving. Gain scores may not be very reliable, power is usually greater for ANCOVA” (Thomas & Knapp, 2009, p. 2). In addition, “there is an important difference between the research question that is implied using the t-test and the research question that underlies the use of ANCOVA. For the former, the question is: “What is the effect of the treatment on the change from pre-test to post-test?” For the latter, the question is: “What is the effect of the treatment on the post-test that is not predictable from the pre-test (*i.e.*, conditional on the pre-test)?” (Thomas & Knapp, 2009, p. 2).

²⁵⁵ also called / paired t-Test / correlated T-Test / Repeated Measure T-Test.

²⁵⁶ denoting a robust and meaningful result.

²⁵⁷ indicating that the shown effect is too small or could have appeared just through chance by random-sampling.

To rule out some conditional pre-test effects that t-tests do not filter out and to get a greater reliability regarding effect of the intervention the Analysis of Covariance method was chosen in this research work.

6.3 Examination of the data quality

6.3.1 Limiting side effects - ANCOVA

It is assumed by logic consideration that there might be an influence from the starting level of the three dependent variables (Environmental Attitudes, Academic Anxiety and the Academic Results) on the respective results of the post-tests. For example, a student, who is anxious by nature will show high score values in the pre-test of Academic Anxiety. The same student might also (still) be more anxious at the time of the post-test, compared to a brave student by nature, while both persons may have changes in their post-test results. If there are observable changes through the intervention of meditation, they might display as more (or less) effect depending on the starting ground of that student.

To eliminate the role that the pre-test plays on the outcome of the post-test and to have a clear statement of the effect of the meditation intervention, the Analysis of the covariance method will be used. The ANCOVA basically tests the effect on a dependent variable, like the ANOVA, but the ANCOVA controls another variable, called the covariate. One chooses as the covariate a variable that most likely influences the shown effect as well apart from the intervention. In the present case it has been taken that the pre-test as our covariate.

The Analysis of the Covariance is an elaborated method of parametric statistics that delivers results of high quality. It also has high demands on the quality of the data.

6.3.2 Representation of the population in the sample – test on normality

Results of parametric statistics can be expanded to general statements that say something about the whole population. The reasoning goes like this: If research wants to make any predictions for a larger population, it has to be representative. The general population is always normally distributed. *E.g.*, variables like intelligence or blood pressure will be normally distributed.

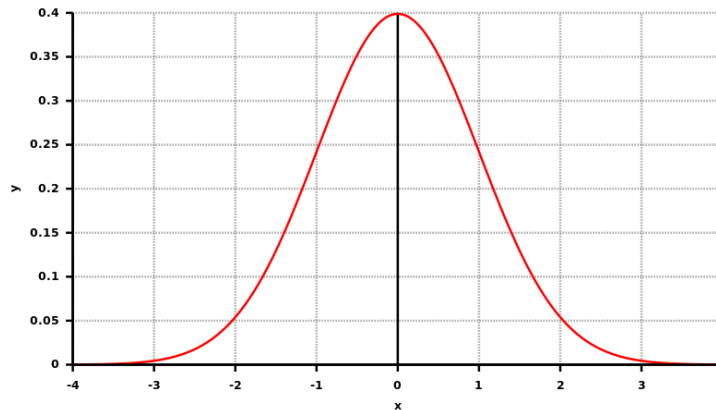


Figure 23: normal curve gaussian curve, error curve

The normal distribution is a symmetrical probability distribution showed in figure 23. It shows higher probabilities for the middle values and smaller probabilities in the occurrence of extreme high or extreme low values of the examined variable. This results in a symmetrical bell-shaped curved graph. The symmetrical center has the highest value / probability of occurrence, it is called the expectation value, the average value or the (arithmetic) mean.

To apply our research results on larger populations and to be able to make prediction *e.g.*, for the effectiveness of an intervention like a vaccine, the tested samples should represent the population. Therefore, the sample should fulfill the same condition of normal distribution like the whole population – or at least that part of the population that we are aiming to cover with our research. For example, different age groups have to be tested separately in test procedures for the suitability of a vaccination for that age group, because what might be a suitable medication for a grown-up male person, may be too much for an elderly woman or a baby child.

To examine if the selected sample is able to give a good projection of the research result for the larger population (in our case the population of 9th grade students in government schools in Andhra Pradesh) the pre-test results have to be calculated in specific ways that test the normal distribution of the data. This was done by several methods that shine a light on different aspects of the normal distribution of a sample. Viewed together one can conclude that the data is normally distributed. If the data would not be normally distributed the ANCOVA method of analysis could not be used. In that case other statistic methods (from non-parametric statistics) could have been used, but with the reduction of the power of the results according to their meaningfulness for the larger population.

In other words, if the sample is not normally distributed the research results may tell us something about the sample group, but it would not be scientifically allowed to say that from that small group we can conclude that if the intervention was applied somewhere else the outcome results should be normally expected to be more less the same. So, without normal distribution of the sample there is no generalization of the research results allowed.

6.3.3 Overview of the techniques used to ensure the legitimate generalization of the research results of the study.

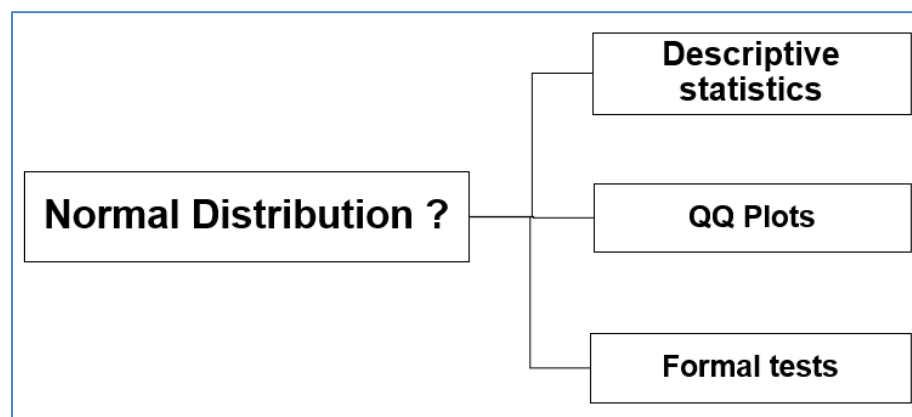


Figure 24: Methods to check normal distribution of a data set.

There are three different ways to test the normality of the data:

- Descriptive statistics generally describe the overall appearance of the sample. Some key figures of this description provide information about the normality of the data.
- Graphical methods are a powerful tool to visualize the data in order to understand by one view the basic structure of the data.
- Formal tests calculate values that indicate normal distribution or negate it.

As results of different tests and methods can be contradictory or unclear. It is advisable to use more than one method to check the normality. By doing so one can reassure the results of one method with another and constitute a coherent picture of the data. On the other hand, if results are controverse, this can also be the starting point of deeper research or analysis because might lead to these different testimonies.

The Data-Output of statistical software's like SPSS and Excel varies from software to software. To provide the researcher with a basic idea of the sample data characteristic key values are calculated (e.g., Mean, Standard Error, Median, Mode, Standard Deviation etc.). These, known as descriptive statistics, which describe the data to the learned researcher in a very brief informative way.

6.3.3.1 Usage of descriptive statistics to test the normal distribution of the data.

To see if the data is normally distributed (and by that if our sample can be considered as representative – amongst other factors) the following four measures are the key indicators. They should be found in a certain way alike to the normal distribution. These measures are expressed in numbers (by the software). They can also be visualized in graphs.

6.3.3.1.1 Skewness (SK)

The skewness measures the symmetry of the data, both sides of the data (distribution curve) should look the same.

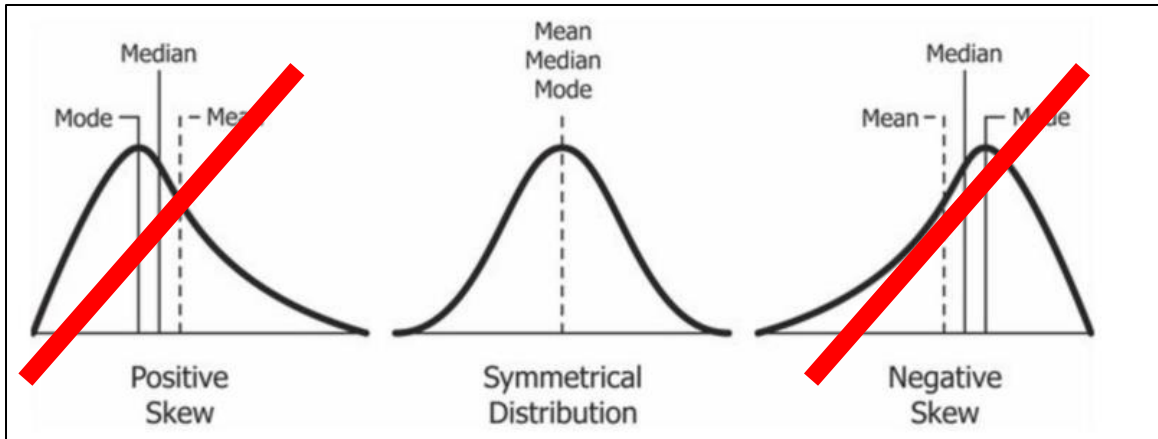


Figure 25: Different skewness's²⁵⁸

The figure 25 shows three graphs of frequency distributions with different skewness's. The symmetrical distribution is not skewed. It is close to a normal distribution. If the data is not normally distributed a high number of values might be found in the lower or in the higher scores. This will result the graph to be bend to the left (positive skew) or to the right (negative skew).

6.3.3.1.2 Standard Error of Skewness (SES)

Standard Error means, deviation from the normal.

To put it simply, no one is 100 percent ideal. When they categorized into good and bad. Even a good person has some minor weaknesses that may not be ideal. However, this person can be considered as a good person despite their small weakness, which is very negligible. That particular non-ideal little weakness that is accepted by everyone can be called the standard error of skewness.

The actual value SK should be lower than the SES than the data is normal distributed.

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https://commons.wikimedia.org/wiki/File:Relationship_between_mean_and_median_under_different_skewness.png

6.3.3.1.3 Kurtosis (Ku)

Dr. Donald J. Wheeler defines: “The kurtosis parameter is a measure of the combined weight of the tails relative to the rest of the distribution.” This is often put in the short form, that Kurtosis measures the flatness of the data. The concept of kurtosis is easier to explain with diagrams than with words.

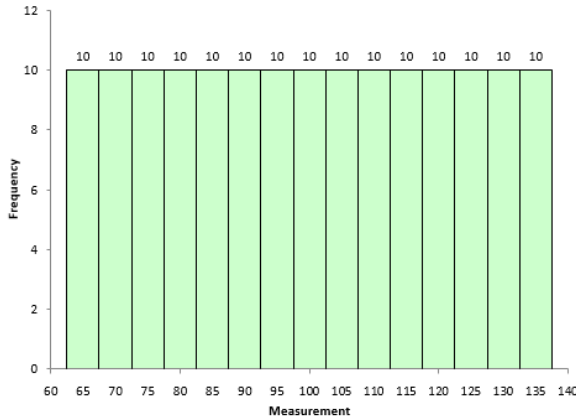


Figure 26: Negative Kurtosis Example²⁵⁹

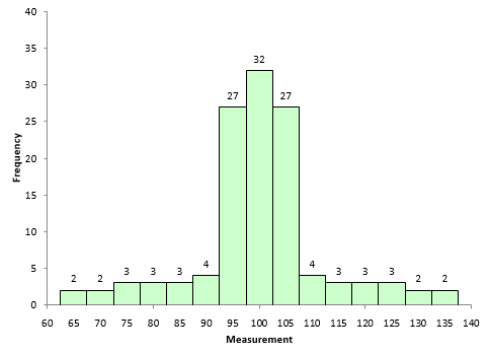


Figure 27: Positive Kurtosis Example²⁶⁰

The figures 26 and 27 show very extreme examples of negative and positive Kurtosis, most data sets will show fewer extreme graphs:

²⁵⁹ McNeese, B. (2016). Are the Skewness and Kurtosis Useful Statistics?. Spcforexcel. <https://www.spcforexcel.com/knowledge/basic-statistics/are-skewness-and-kurtosis-useful-statistics>

²⁶⁰ McNeese, B. (2016). Are the Skewness and Kurtosis Useful Statistics?. Spcforexcel. <https://www.spcforexcel.com/knowledge/basic-statistics/are-skewness-and-kurtosis-useful-statistics>

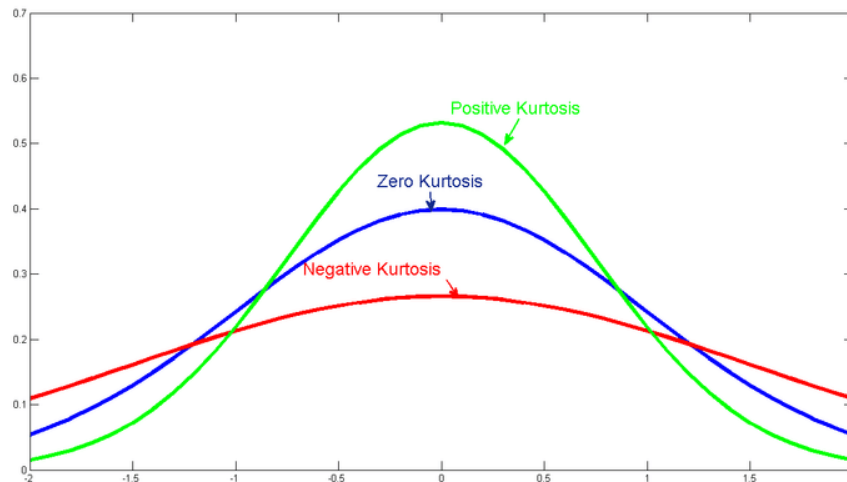


Figure 28: Example of different Kurtosis graphs (Source: Ahmadian, 2014, p.61)²⁶¹

Figure 28 shows three different kurtosis graphs, viz., positive, negative and zero kurtosis.

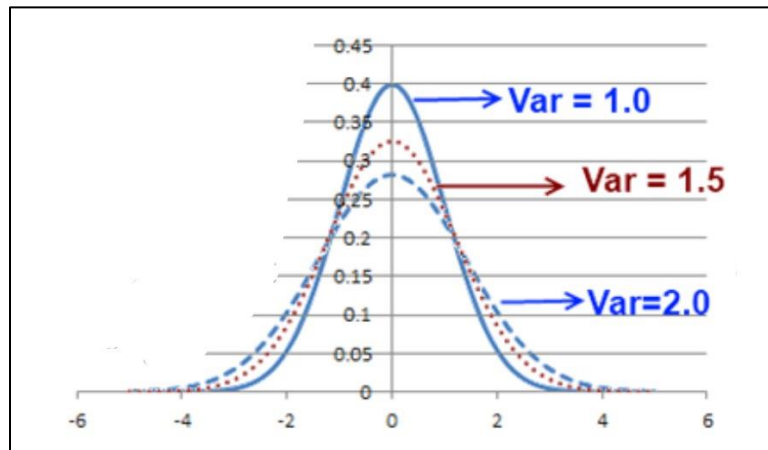


Figure 29: three graphs of frequency distributions with the same Kurtosis, but different variances²⁶²

The figure 29 shows three graphs of frequency distributions²⁶³ with the same Kurtosis, but different variances.

²⁶¹ Ahmadian (2014, p. 61). https://www.researchgate.net/figure/Value-of-kurtosis-for-different-Gaussian-distribution-compared-with-normal-distribution_fig16_318491600

²⁶² Pareek, M. (2012, December 02). *Understanding Kurtosis*. Risk Education PRM Exam Preparation. http://www.science.earthjay.com/instruction/HSU/2015_fall/GEOL_332/lectures/lecture_16/Understanding%20Kurtosis.html

²⁶³ Standard Normal Distribution, Mean = 0

As graphs with different variance but same kurtosis can look like two graphs with different kurtosis, only from the graph itself the kurtosis cannot be diagnosed. That's why the kurtosis value has to be calculated.

6.3.3.1.4 Standard Error of Kurtosis (SEK)

The actual Kurtosis value should be lower than the value of the standard error of Kurtosis (SEK).

If the values of Skewness and Kurtosis are not lower than their respective Standard Error, the sample / data does not represent the population, that is normally distributed, so the research outcomes cannot be generalized.

6.3.3.2 Graphical Method to test Normality – QQ-plots

Quantile-Quantile-plots (QQ plots) are a graphical method to test the normality.

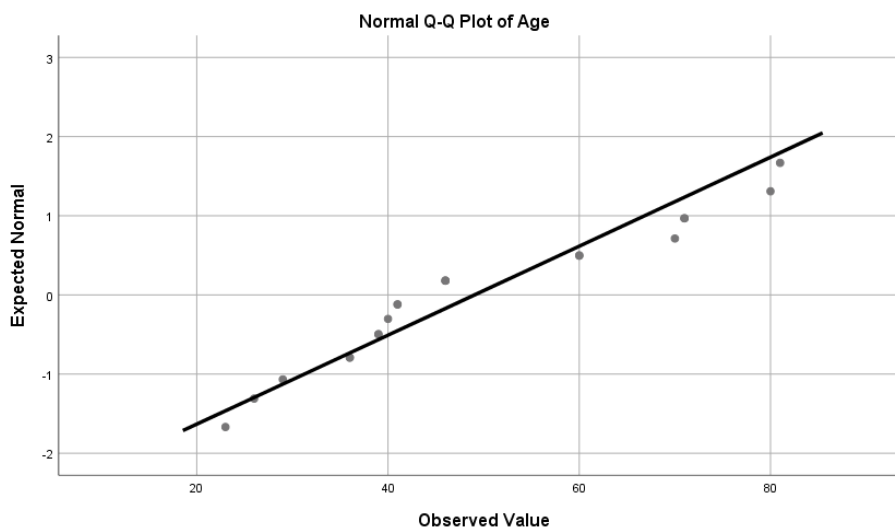


Figure 30: QQ-plot example

Example of QQ plot in figure 30, shows a graph with two axis and a zero point. All the scores should be scattered to a standard line; if they are the data is normally distributed. QQ-plots can be understood as another way of representing a normal distribution (other

than the bell-shaped normal curve). The SPSS software has a QQ-plot output. If all the scores are near to the standard line this means normality can be concluded. If the dots are far away from the normal line, then they are outliers.

6.3.3.3 Formal tests

Four formal tests on normality are widely used in statistics. Two of them are available in the SPSS software used, two of them are not included.

- Kolmogorov-Smirnov-Test (KST, available in SPSS)
- Shapiro-Wilk (SWT, available in SPSS)
- Anderson-Darling-Test (ADT, not included in SPSS)
- Rean-Joiner test (RJT, not included in SPSS)

Table 11. Example for Kolmogorov-Smirnov-and Shapiro-Wilk-Test Results

Kolmogorov-Smirnov-Test (KST)			Shapiro-Wilk-Test (SWT)		
Statistic	df	Significance	Statistic	df	Significance
0.056	200	.200*	0.978	200	0.003

The table 11 shows example results for the Kolmogorov-Smirnov- and Shapiro-Wilk-Test. For Kolmogorov-Smirnov- and Shapiro-Wilk-Test the Null-Hypothesis is assumed, that the data is normal distributed. If the significance is higher than $p=0.05$, than the hypothesis that the data is normal distributed can be accepted.

In this example for the KST the significance is higher than $p=0.05$ therefore the KST would indicate a normal distribution of the data, while for the SWT the is lower than $p=0,05$ therefore the SWT would not indicate a normal distribution of the data. Therefore, other methods would be necessary to conclude or falsify normal distribution.

The level of Significance is an imaginary line that shows, the occurrence of an event is by chance (this means not due to the treatment) or not by chance (this means due to the treatment). Social Sciences and Management Research fix 95% as their level of Significance. Engineering and medicine fix their level of significance at 99%, as they assume, they operate in controlled conditions. The levels are fixed as common standards.

6.3.4 Requirements of the measurement scales

While non-parametric statistic techniques can be applied on any scale of measurement (including nominal and ordinal scale), parametric statistics require interval or ratio scale as input data. The tests chosen for the measurements of the three dependent variables (DV1-EA, DV2-AA, DV3-AP) have ratio scales; they deliver a specific number as their test result output.

The collected data should show some connection between the pre- and post-test results. For example, a good student in the pre-test will most likely be a good student in the post-test. This relationship is mathematically expressed through a linear regression equation (of the form $y = a + bx$) and graphically represented by a regression line. The data of the Experimental Group and the Control Group should be alike, in a way that expresses a kind of homogeneity of the two Groups. In other words, they should be in a way similar in their composition²⁶⁴. This homogeneity aspect can be graphically analyzed by the gradient angle of the regression lines – if the regression line of EG and CG are parallel, they are alike, then the groups are found to be homogenous.

In summary there are six assumptions for the use of the ANCOVA method:

1. Independence of the scores
2. Linearity
3. Homogeneity of the regression slopes
4. Normality
5. Independence of covariate and treatments
6. Reliability of covariate

6.3.5 Effect size

The effect size is measured by the difference of the Means form pre-test and post-test and in case of the ANCOVA by the difference of the Adjusted Means.

²⁶⁴ which can be observed by similar test observations – though the results of the post-test of the EG and CG groups may and are expected to vary.

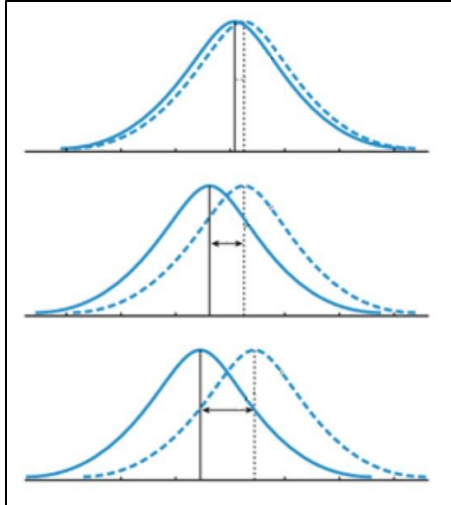


Figure 31: Three graphs demonstrating small, medium and large effect-sizes.

The figure 31 shows three diagrams with bell-shaped distribution curves, the dashed lines represent the values of the pre-test. The blue line curves represent the post-tests. With a perfect normal distribution as in the picture, the Mean value is exactly in the middle of the distribution curve. The further the centers of the various curves are shifted, the greater the effect strength.

Testing the collected data

Huge amount of data has been collected two times from 400 students. Before applying any statistical test, it is especially important to test the data to check whether the necessary assumptions are satisfied or not for the applicability of appropriate statistical tests. Hence, the normality, linearity homogeneity and regression lines of the data were checked for the four groups²⁶⁵ of data separately for each dependent variable to see the applicability of Analysis of Co-Variance (ANCOVA).

Result: Required assumptions to apply ANCOVA are fulfilled for whole data. Therefore, the analysis of covariance can be applied in order to find out the effect of meditation on the selected dependent variables.

²⁶⁵ Pre-test data of the Experimental Group (EG), post-test data of the EG, pre-test data of the Control Group (CG) and post-test data of the CG.

Finding the effect of meditation on three dependent variables

The three tests for the dependent variables (DV1-EA, DV2-AA, DV3-AP) have scales of different length each. The scale of DV1-EA ranges from minimum 61 to a maximum of 223, the scale of DV2-AA ranges from minimum 44 to a maximum of 132 and the scale of DV3-AP ranges from minimum 0 to a maximum of 100 possible reachable points. So, it will be a bit difficult to get the quick overview of results of effect of meditation on three dependent variables. To put the average scores of pre- and post-test²⁶⁶ into an easier format in order to interpret and understand serenely, researcher transformed them into percentage values²⁶⁷ as a normative process. The difference between the %Mean post-test value and the %Mean pre-test value can be seen in the “Change in percent points” column in the following tables to understand the effect of the meditation on both control and experimental groups of students.

Summary and conclusion

This chapter described the data-analysis procedures for checking the quantitative data used in the following chapters in Part III.

Once the appropriation of the sample has to be checked. For this purpose, the test results of the preliminary tests per school are compared to determine whether there are significant differences between the different schools. If there is no significant difference, the sample can be treated as a large group, called the study sample.

Once this has been done, the same statistical procedures are used for each variable. This is done in the following in separate chapters for each variable. Various and several rules must be met in order for scientifically determine that the test results can be used as an appropriate predictor of future events for any other group of the study population. This creates a meaningfulness in the way: “If the intervention is carried out in a similar way in other schools, the results in these schools will also be similar to the results of this study”. After checking these assumptions, the effect size is finally determined, if possible, compared with normal values and converted into percentages for better understanding.

²⁶⁶ Mean pre-test and mean-posttest.

²⁶⁷ % Mean pre-test and %Mean post-test

PART III:
ANALYSIS, AND PRESENTATION OF
THE DATA RESULTS

7 Determination of the appropriateness of the sample

To find out the effect of meditation, first we have to assure that selected group of students in both the groups and in the ten schools are at the same level at the beginning of the experiment. There should not be any bias. This concept can be made clear with the following example, at the starting point of a running race all the players should start from the same line, no one should be ahead right from the start. Then only the winner can be considered as a winner. In the same way, it has to be assured that all groups start from the same position.

To have an appropriate sample is essential for research, particular for quantitative approaches. The descriptive statistics are shown, and an Analysis of Variance (ANOVA) is done to compare the Mean values of the three dependent variables (DV1-EA, DV2-AA, DV3-AP) among ten different schools for the Experimental and the Control Group.

7.1 Descriptive statistics for the dependent variables per school

The research was conducted as a semester long module, with ten schools, each school having a class of approx. 20 students as Experimental Group and a class of the same size as Control Group. This resulted in the 400 Data Sets for each tested scale. N=200 for the Experimental Group and N=200 for the Control Group.

The following tables and figures show the descriptive statistics for the three dependent variables (DV1-EA, DV2-AA, DV3-AP) from the Experimental and Control Group: The means of the different observations in the 10 schools of the sample, the number of the

students in the classes, the Standard Deviation²⁶⁸ (SD) of the statistic and the Standard Error of Mean²⁶⁹ (SEM). These are key measures that describe a set of data in a condensed way.

Table 12. Descriptive statistics of pre-test values in relation to schools from Experimental Group (EG) for Environmental Attitudes (DV1-EA)

School Code	Observation	Total No. of Students	Mean Score	Standard Deviation (SD)	Standard Error of Mean (SEM)
901	DV1-EA EG Pre	20	168.90	23.05	5.15
902	DV1-EA EG Pre	20	169.10	21.78	4.87
903	DV1-EA EG Pre	20	167.35	21.16	4.73
904	DV1-EA EG Pre	20	170.85	20.79	4.65
905	DV1-EA EG Pre	20	169.00	20.97	4.69
906	DV1-EA EG Pre	20	170.95	20.95	4.68
907	DV1-EA EG Pre	16	173.75	20.13	5.03
908	DV1-EA EG Pre	19	169.47	21.74	4.99
909	DV1-EA EG Pre	23	168.78	19.60	4.09
910	DV1-EA EG Pre	22	172.59	22.33	4.76
	Total	200	170.01	20.87	1.48

The table 12 shows the pre-test values for the Environmental Attitudes (DV1-EA) the means of the observations in the different schools for the Experimental Group as well as the number of the students in the classes, the Standard Deviation (SD) of the statistic and the Standard Error of Mean (SEM).

²⁶⁸ Standard Deviation (SD) – gives the average deviation or divergence of the test-groups values from the mean value. A large SD hints at a widespread variation of the test values, while a small SD suggest the possibility that many test values are close to the mean value.

²⁶⁹ Standard Error of Means (SEM) – quantifies the accuracy of the sample-measurement of the mean. It is the error rate of the poll, that originates from taking a sample (representing the population) and not asking the whole population. It also norms the SD by using the sample size. By that the SEM makes the measured distortion of different samples and samples sizes comparable.

Table 13. Descriptive statistics of pre-test values in relation to schools from Control Group (CG) for Environmental Attitudes (DV1-EA)

School Code	Observation	Total No. of Students	Mean Score (MS)	Standard Deviation (SD)	Standard Error of Mean (SEM)
901	DV1-EA CG Pre	20	168.45	21.57	4.82
902	DV1-EA CG Pre	20	169.65	19.32	4.32
903	DV1-EA CG Pre	20	167.90	21.17	4.73
904	DV1-EA CG Pre	20	169.85	20.41	4.56
905	DV1-EA CG Pre	20	169.15	20.88	4.67
906	DV1-EA CG Pre	20	172.15	17.26	3.86
907	DV1-EA CG Pre	16	173.44	18.18	4.55
908	DV1-EA CG Pre	19	167.68	20.28	4.65
909	DV1-EA CG Pre	23	168.04	19.57	4.08
910	DV1-EA CG Pre	22	175.55	18.00	3.84
	Total	200	170.16	19.44	1.37

The table 13 shows the pre-test values for the Environmental Attitudes (DV1-EA) the means of the observations in the different schools for the Control Group as well as the number of the students in the classes, the Standard Deviation (SD) of the statistic and the Standard Error of Mean (SEM).

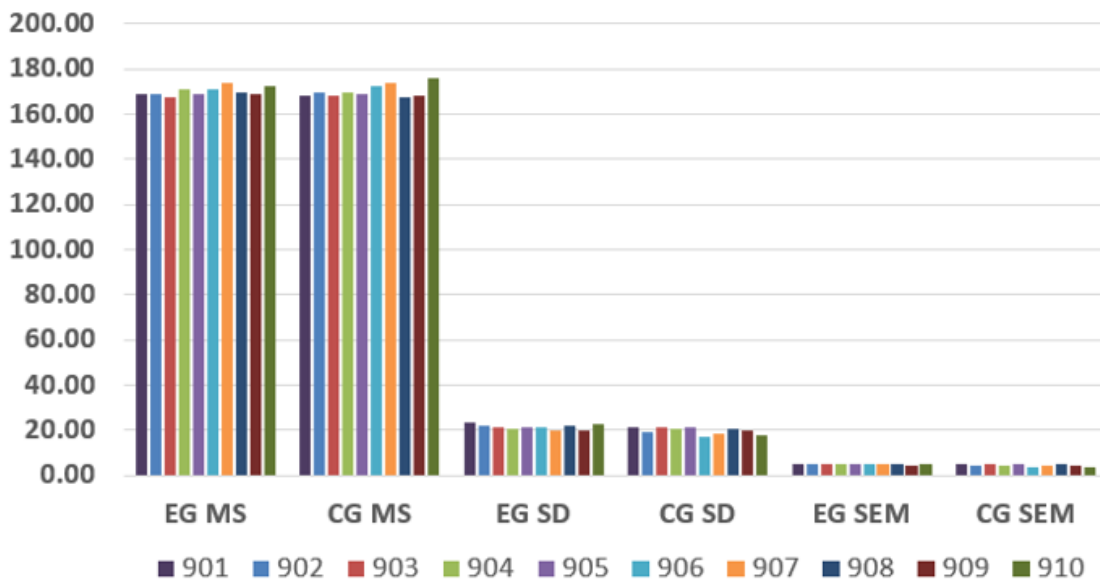


Figure 32: Bar graph for DV1-EA with Mean Score (MS), Standard Deviation (SD) and Standard Error of Mean (SEM) for Experimental Group (EG) and Control Group (CG) for each school (901-910)

The figure shows the bar graph for the data of the previous two tables. The values of the Mean Score (MS), Standard Deviation (SD) and Standard Error of Mean (SEM) for Experimental Group (EG) and Control Group (CG) are displayed for each school (901-910) in a bar. From the graph we can see that there is no significant difference between the values for each dimension between the ten schools (901-910) and no significant difference between the measures of the Experimental (EG) and the Control Group (CG) for Dependent Variable 1 Environmental Attitudes (DV1-EA).

Table 14. Descriptive statistics of pre-test values in relation to schools from Experimental Group (EG) for Academic Anxiety (DV2-AA)

School Code	Observation	Total No. of Students	Mean Score (MS)	Standard Deviation (SD)	Standard Error of Mean (SEM)
901	DV2-AA EG Pre	20	84.20	16.09	3.60
902	DV2-AA EG Pre	20	84.85	15.26	3.41
903	DV2-AA EG Pre	20	84.10	15.33	3.43
904	DV2-AA EG Pre	20	86.15	14.65	3.28
905	DV2-AA EG Pre	20	89.85	14.95	3.34
906	DV2-AA EG Pre	20	87.55	15.71	3.51
907	DV2-AA EG Pre	16	86.06	14.74	3.69
908	DV2-AA EG Pre	19	87.11	15.64	3.59
909	DV2-AA EG Pre	23	89.39	14.60	3.04
910	DV2-AA EG Pre	22	87.50	15.84	3.38
	Total	200	86.74	15.07	1.07

The table 14 shows the pre-test values for the Academic Anxiety (DV2-AA) the means of the observations in the different schools for the Experimental Group as well as the number of the students in the classes, the Standard Deviation (SD) of the statistic and the Standard Error of Mean (SEM).

Table 15. Descriptive statistics of pre-test values in relation to schools from Control Group (CG) for Academic Anxiety (DV2-AA)

School Code	Observation	Total No. of Students	Mean Score (MS)	Standard Deviation (SD)	Standard Error of Mean (SEM)
901	DV2-AA CG Pre	20	84.30	14.85	3.32
902	DV2-AA CG Pre	20	84.75	14.87	3.33
903	DV2-AA CG Pre	20	86.65	12.53	2.80
904	DV2-AA CG Pre	20	88.85	16.87	3.77
905	DV2-AA CG Pre	20	86.35	15.42	3.45
906	DV2-AA CG Pre	20	89.15	14.74	3.30
907	DV2-AA CG Pre	16	83.63	16.79	4.20
908	DV2-AA CG Pre	19	85.95	13.80	3.17
909	DV2-AA CG Pre	23	89.35	16.00	3.34
910	DV2-AA CG Pre	22	86.82	13.99	2.98
	Total	200	86.69	14.80	1.05

The table 15 shows the pre-test values for the Academic Anxiety (DV2-AA) the means of the observations in the different schools for the Control Group as well as the number of the students in the classes, the Standard Deviation (SD) of the statistic and the Standard Error of Mean (SEM).

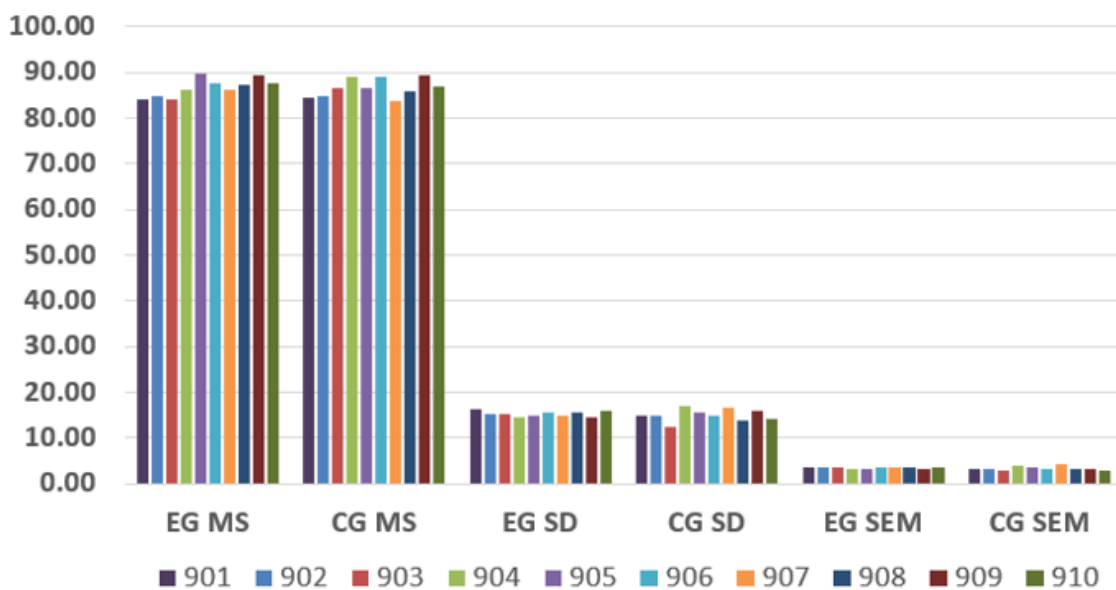


Figure 33: Bar graph for DV2-AA with Mean Score (MS), Standard Deviation (SD) and Standard Error of Mean (SEM) for Experimental Group (EG) and Control Group (CG) for each school (901-910)

The figure 33 shows the bar graph for the data of the previous two tables. The values of the Mean Score (MS), Standard Deviation (SD) and Standard Error of Mean (SEM) for Experimental Group (EG) and Control Group (CG) are displayed for each school (901-910) in a bar. From the graph we can see that there is no significant difference between the values for each dimension between the ten schools (901-910) and also no significant difference between the measures of the Experimental (EG) and the Control Group (CG) for Dependent Variable 2 Academic Anxiety (DV2-AA).

Table 16. Descriptive statistics of pre-test values in relation to schools from Experimental Group (EG) for Academic Performance (DV3-AP)

School Code	Observation	Total No. of Students	Mean Score (MS)	Standard Deviation (SD)	Standard Error of Mean (SEM)
901	DV3-AP EG Pre	20	67.60	14.34	3.21
902	DV3-AP EG Pre	20	66.85	14.35	3.21
903	DV3-AP EG Pre	20	67.90	15.06	3.37
904	DV3-AP EG Pre	20	69.20	12.70	2.84
905	DV3-AP EG Pre	20	70.25	16.77	3.75
906	DV3-AP EG Pre	20	70.55	15.60	3.49
907	DV3-AP EG Pre	16	77.50	13.54	3.38
908	DV3-AP EG Pre	19	74.21	15.62	3.58
909	DV3-AP EG Pre	23	72.17	15.26	3.18
910	DV3-AP EG Pre	22	70.55	14.69	3.13
	Total	200	70.55	14.24	1.01

The table 16 shows the pre-test values for the Academic Performance (DV3-AP) the means of the observations in the different schools for the Experimental Group as well as the number of the students in the classes, the Standard Deviation (SD) of the statistic and the Standard Error of Mean (SEM).

Table 17. Descriptive statistics of pre-test values in relation to schools from Control Group (CG) for Academic Performance (DV3-AP)

School Code	Observation	Total No. of Students	Mean Score	Standard Deviation (SD)	Standard Error of Mean (SEM)
901	DV3-AP CG Pre	20	67.70	14.57	3.26
902	DV3-AP CG Pre	20	66.35	13.18	2.95
903	DV3-AP CG Pre	20	67.95	14.90	3.33
904	DV3-AP CG Pre	20	70.15	14.88	3.33
905	DV3-AP CG Pre	20	70.75	15.58	3.48
906	DV3-AP CG Pre	20	70.00	12.93	2.89
907	DV3-AP CG Pre	16	74.94	14.86	3.72
908	DV3-AP CG Pre	19	72.47	14.01	3.21
909	DV3-AP CG Pre	23	72.26	14.44	3.01
910	DV3-AP CG Pre	22	73.36	13.98	2.98
	Total	200	70.55	14.24	1.01

The table 17 shows the pre-test values for the Academic Performance (DV3-AP) the means of the observations in the different schools for the Control Group as well as the number of the students in the classes, the Standard Deviation (SD) of the statistic and the Standard Error of Mean (SEM).

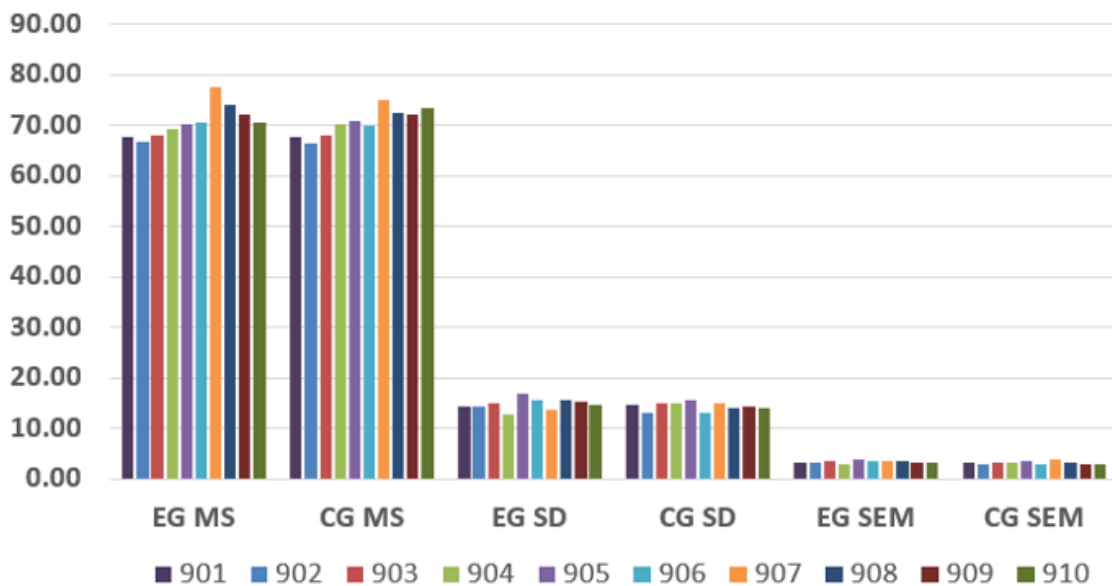


Figure 34: Bar graph for DV3-AP with Mean Score (MS), Standard Deviation (SD) and Standard Error of Mean (SEM) for Experimental Group (EG) and Control Group (CG) for each school (901-910)

The figure 34 shows the bar graph for the data of the previous two tables. The values of the Mean Score (MS), Standard Deviation (SD) and Standard Error of Mean (SEM) for Experimental Group (EG) and Control Group (CG) are displayed for each school (901-910) in a bar. From the graph we can see that there is no significant difference between the values for each dimension between the ten schools (901-910) and also no significant difference between the measures of the Experimental (EG) and the Control Group (CG) for Dependent Variable 3 Academic Performance (DV3-AP).

The descriptive statistics and the bar graphs of the measurement give a good first quick impression to get an overview of the data. However, this is not enough for a correct scientific analysis. Therefore, the data should be analyzed further using other suitable and appropriate statistical tests.

7.2 Testing the appropriateness of the sample with ANOVA

For the analysis of the conducted study, it has to be analyzed, if the groups have to be treated as 10 different groups that have to be analyzed separately or if they can be basically seen as one group that just happen to consist of different “groups” but basically can be considered one group, like in one classroom a left, middle and right row and a front, middle and back section.

To compare the means of more than two groups the Analysis of Variance (ANOVA) is used. The difference of the Means is calculated by looking at the Variances with the help of F-tests²⁷⁰.

²⁷⁰ F-tests are named after Sir Ronald Fisher. F-tests show the relationship between Variances. Variances are a measure for the dispersion (or scatter) of a sample. They are the counter part of central tendency measures (like Mean, Median). The Variance shows how far stretched or squeezed the probability distribution of a sample is. Variance is the square of the standard deviation.

The result of this analysis will determine the way in which the further analysis of the dependent variables can be done – for 20 different small EG and CG scholastically groups or for two bigger groups with N=200 for the Experimental Group and N=200 for the Control Group.

Basically, the ANOVA compares the means of the different schools. This is done among the different schools (Between Groups value) and within the classes (Within Groups value). The lesser the difference, the more homogenous are the 10 different classes. This analysis is done for Experimental and Control Group and for the three dependent variables (DV1-EA, DV2-AA, DV3-AP). The following three tables show the results of the ANOVA:

Table 18. One-way ANOVA (Analysis of Variance) in relation to schools for DV1-EA

Observation	Source of Variation	Sum of Squares (SS)	Degree of freedom (df)	Mean Square	Value of F	Significance Value (SV) / p-value
DV1-EA EG Pre	Between Groups	645.36	9	71.71	0.158	0.998
	Within Groups	86016.62	190	452.72		
DV1-EA CG Pre	Between Groups	1296.79	9	144.09	0.371	0.948
	Within Groups	73889.40	190	388.89		

Table 19. One-way ANOVA (Analysis of Variance) in relation to schools for DV2-AA

Observation	Source of Variation	Sum of Squares (SS)	Degree of freedom (df)	Mean Square	Value of F	Significance Value (SV) / p-value
DV2-AA EG Pre	Between Groups	737.65	9	81.96	0.350	0.957
	Within Groups	44451.31	190	233.95		
DV2-AA CG Pre	Between Groups	729.82	9	81.09	0.360	0.953
	Within Groups	42831.34	190	225.43		

Table 20. One-way ANOVA (Analysis of Variance) in relation to schools for DV3-AP

Observation	Source of Variation	Sum of Squares (SS)	Degree of freedom (df)	Mean Square (MS)	Value of F	Significance Value (SV) / p-value
DV3-AP EG Pre	Between Groups	1715	9	191	0.863	0.560
	Within Groups	41963	190	221		
DV3-AP CG Pre	Between Groups	1306	9	145	0.706	0.703
	Within Groups	39058	190	206		

The three tables 18, 19 and 20 list the SPSS 25 results for the one-way ANOVA (Analysis of Variance) between and within the groups. It was done for each group (EG & CG) and each pre-test (DV1-EA, DV2-AA, DV3-AP) for the factor school. To see if there is any difference between the groups regarding the factor school. The Null-Hypothesis of the ANOVA is designed in the way that a lower significance value than $p = 0.05$ indicates a difference between the tested groups (factors).

The significance values of all observations (DV1-EA EG Pre 0.998, DV1-EA CG Pre 0.948, DV2-AA EG Pre 0.957, DV2-AA CG Pre 0.953, DV3-AP EG Pre 0.560, DV3-AP CG Pre 0.703) are higher than the estimated error probability of 5% ($p > 0.05$). This means that the assumption that there is a significance between the samples regarding the factor school has to be rejected.

7.3 Summary

The ANOVA calculations emphasize the results that we assumed by looking at the descriptive statistics and the bar chart in the previous subchapter: There is no significant difference between the schools found for all the pre-test observations.

For the Experimental Group (EG) and the Control Group (CG), the significance is higher than 0.05 for the three dependent variables (DV1-EA, DV2-AA, DV3-AP), indicating that the groups do not differ significantly regarding the factor school. Hence, both the groups (EG, CG) are found homogeneous in nature. Therefore, the design of the study is found appropriate to conduct the experiment.

8 DV1-EA: Analysis of the data to find out the effect of meditation related to Dependent Variable-Environmental Attitudes

8.1 Describing the sample with key figures - Descriptive statistics of the DV1-EA dataset

The basic idea of descriptive statistics is to condense the large amount of data into key values. The data of the DV1-EA measurement was put in the SPSS 25 software. For the observations of the Experimental and Control Group in the pre- and post-test the following statistic key values were the results found to describe the data sets.

Table 21. Descriptive statistical analysis of the pre-test and post-test results of the Environmental Attitudes Scale (DV1-EA) of the Experimental Group (EG) and the Control Group (CG)

Observation	DV1-EA CG Pre	DV1-EA EG Pre	DV1-EA CG Post	DV1-EA EG Post
Measure	Value	Value	Value	Value
Mean	170.16	170.01	171.75	187.52
Standard Error of Mean (SEM)	1.37	1.48	1.36	1.15
Median	172.00	172.00	173.00	192.50
Variance	377.82	435.49	370.18	264.94
Standard-Deviation (SD)	19.44	20.87	19.24	16.28
Minimum value	131.00	130.00	131.00	152.00
Maximum value	202.00	204.00	203.00	211.00
Range (R)	71.00	74.00	72.00	59.00
Skewness (SK)	-0.32	-0.24	-0.33	-0.69
Std. Error of Skewness (SES)	0.17	0.17	0.17	0.17
Kurtosis (Ku)	-0.91	-1.00	-0.91	-0.65
Std. Error of Kurtosis (SEK)	0.34	0.34	0.34	0.34

The table 21 shows the descriptive statistics related to the scores of the Environmental Attitudes (DV1-EA) for the Experimental Group (EG) and Control Group (CG) for the two observations (pre-test and post-test).

The Mean²⁷¹ value (“average score”) of the pre-tests of the CG (170.16) and the EG (170.01) are awfully close together. The Mean of the post test is slightly higher for the Control Group (171.75) and remarkably higher for the Experimental Group (187.52).

The Median²⁷² scores show the same tendency. They are the same for EG and CG in the pre-test (172), a bit higher in the post-test for the CG (173) and remarkably higher for the post-test of the Experimental Group (192.50). Mean and Median do not differ very much, which can already be seen as an indicator of no or only small skewness.²⁷³

Even if the Means of different data sets may be nearly of the same value, data sets can be scattered differently²⁷⁴. They could show a slight or a strong diversity of the data points.

²⁷¹ Mean is also called the expected value, which can be misleading. For example, the average income of a population can be much higher than the income that most of the people have, if there are some individuals with a very large income – that will distort the value towards the higher end (skewness).

²⁷² The Median is the “middle value”. When all test results are ordered in an ascending order, the median is the score value of the observation standing at the middle position, e.g., the score value of the observation at the 50th place in the ascending order, in a sample of 100 observations. Sometimes the Median gives a better feeling what most of the “typical” observations are. Let’s take the income distribution as an example. In a sample with a small number of individuals some very high incomes values can push the average score value, the Mean, up. The Median will be closer to the earnings of most of the people than the Mean. In France 2019 the Mean wealth per adult was 280,121 US Dollars, while the Median was 104,942 US Dollar. In Germany, the Mean wealth was 216,654 and the Median 35,313 US Dollars in 2019 (Suisse, 2019). (Suisse, C. (2019). Global wealth databook 2019. Credit Suisse Research Institute. <https://www.credit-suisse.com/media/assets/corporate/docs/about-us/research/publications/global-wealth-databook-2019.pdf>).

²⁷³ The Skewness as well as Kurtosis will be examined more closely in the following subchapter.

²⁷⁴ The Range (R) gives the span width of the values, it is calculated by the subtraction of the Minimum value from the Maximum value. The Range alone could be misleading, for example these values could come from extreme outliers. Other key values that contain all score values and describe the diversity of the data set are the Standard Error of the Mean, the Variance and the Standard Deviation.

The Variance is calculated by the squared distances to the mean from each score, added up and divided by the quantity of the score values. The squaring involved make the Variance value difficult for intuitive understanding but brings some mathematical advantages.

The Standard Deviation (SD) of the pre-test observations of EG and CG and the post-test of the Control Group (CG Pre 19.44, EG Pre 20.87, CG Post 19,24) show only small differences in their values, while the observations of the Experimental Group (EG Post 16.28) are smaller than the other SD. In addition, the DV1-EA EG Post observation differs from the rest by a smaller range (R= 59.00) and higher Minimum and Maximum values.

These key measures taken together indicate an effect on the Experimental Group through the intervention.

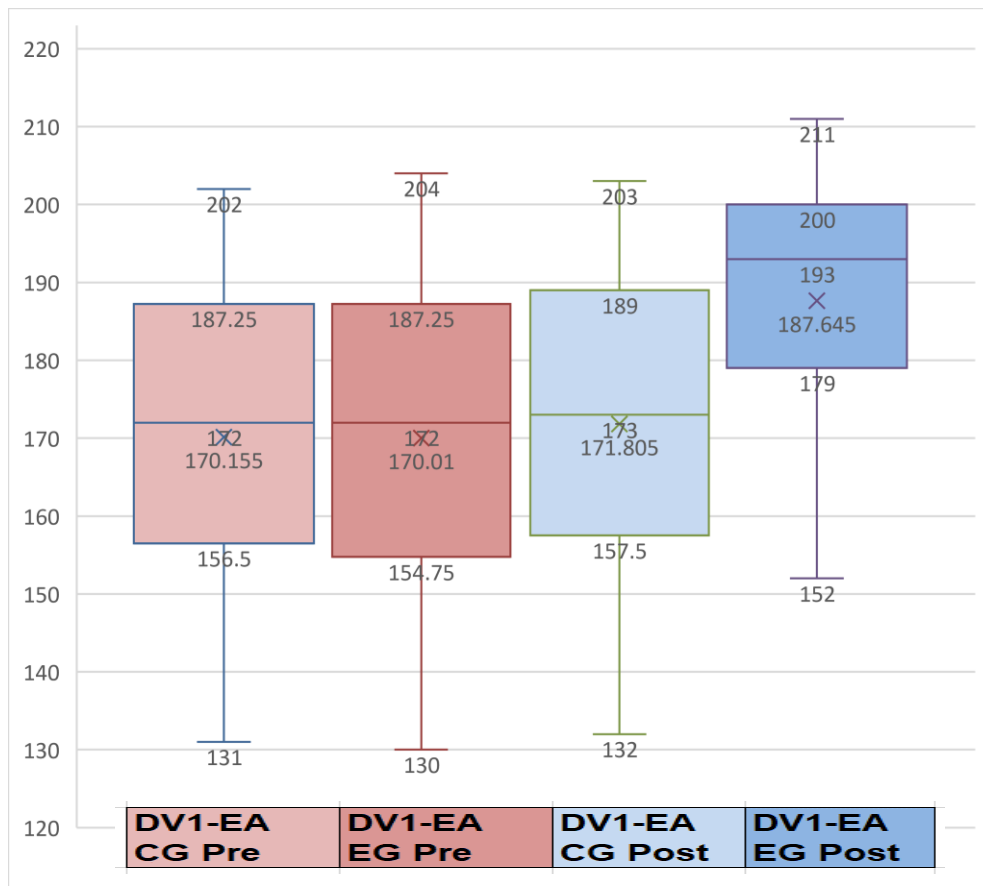


Figure 35: Boxplot diagram for the descriptive statistics of DV1-EA

The Standard Deviation (SD) solves the problem of intuitive understanding. It is the square root of the Variance. If the Standard Deviation (SD) is added and subtracted from the Mean, these score values span a section around the Mean, where most of the observed values can be found. If the Data is normally distributed around 2/3 of the observed values are in this segment.

The Figure 35 shows the boxplot diagram of the descriptive statistics related to the scores of the Environmental Attitudes (DV1-EA) for the Experimental Group (EG) and Control Group (CG) for the two observations (pre-test and post-test). The diagram was done with Excel, therefore the values differ slightly from the table calculated by SPSS²⁷⁵.

The Mean is given by the “X” sign. The Median²⁷⁶ is given by the horizontal line within the box. The size of the boxes is determined through the 1st quartile (Q₁ or 25th percentile) as the lower border and the 3rd quartile (Q₃ or 75 percentile) as the upper border. These quartiles are the medians of the lower and the upper half of the dataset are also used to define outliers²⁷⁷. The boxplot diagram shows no outliers, therefore the “antennas” (whisker) give the Minimum and Maximum value of each observation²⁷⁸.

The boxplot contributes the educated guess mentioned earlier, that the intervention with Sahaja Yoga Meditation showed an effect on the Experimental Group. The boxplots of the pre-test observations of CG and EG and the post-test of CG seem to be obviously different to the post-test data from the Experimental Group (EG). The box plots show no indication to falsify normal distribution and no outliers are shown.

In the following subchapters it will be examined, if the data of our sample can be found normally distributed, as this would indicate that our sample can be seen representative for the population (meaning all 9th graders in government schools in Andhra Pradesh) and the research results then could be generalized. Also, this set of examinations is necessary to test the assumptions of the Analysis of the Covariance. By the ANCOVA we want to find out, in more detail and accuracy, the effect of the meditation intervention and if the shown

²⁷⁵ SPSS is considered to deliver the better mathematical results, while Excel is better with the diagrams.

²⁷⁶ Median is the central value; it is a position parameter that divides the data set into exactly two parts. 50% of the data points show a lower score value, 50% of the data set shows a higher score value than the Median. It is a good measure for a “typical” value.

²⁷⁷ Outliers are defined as follows. The box width spanned by the 1st and 3rd quartile shall be multiplied by 1.5 and added on top or subtracted for the lower boundary. Score values above or below are considered to be outliers – abnormal occurrences.

²⁷⁸ If there are outliers, the “antenna” (whisker) shows the next bigger value for outliers below and the next smaller value for outliers above the box.

effect can be considered significant. The magnitude of the shown effect will be discussed and classified.

8.2 Pre-Analysis: Testing assumptions of the DV1-EA data for the applicability of appropriate statistical tests

8.2.1 Testing normality of the DV1-EA data

The tested samples of EG and CG should represent the sample (part of the population selected for the present research). Therefore, the sample should also be normally distributed, like the normal population is. This means that in our sample should be the same type and proportions of people as in the large population. In our case we are not aiming to make predictions about the influence of meditation in whole of India or in the whole world. The focus of the research is on teenagers from government schools in class 9 in Andhra Pradesh. Hence it is “enough”, if our sample is representative for children from government schools in class 9 in Andhra Pradesh.

The findings related to the assumption of normality, for the use of ANCOVA on the Environmental Attitudes (DV1-EA) are:

8.2.1.1 Kolmogorov-Smirnov and Shapiro-Wilk-Test

The Kolmogorov-Smirnov-Test and the Shapiro-Wilk-Test are the two formal tests on normality that are provided by the SPSS25 software. The Null-Hypothesis of both tests is

that the data is normal distributed. If the significance is higher than $p=0,05$, than the hypothesis, that the data is normal distributed, can be accepted.

Table 22. Kolmogorov-Smirnov-and Shapiro-Wilk-Test for DV1-EA

Test / Group / Observation	Kolmogorov-Smirnov-Test			Shapiro-Wilk-Test		
	Statistic	df	Significance	Statistic	df	Significance
DV1-EA CG Pre	0.073	200	0.012	0.956	200	0.000
DV1-EA EG Pre	0.080	200	0.004	0.954	200	0.000
DV1-EA CG Post	0.071	200	0.016	0.956	200	0.000
DV1-EA EG Post	0.145	200	0.000	0.913	200	0.000

The Table 22 shows the SPSS 25 results of the Kolmogorov-Smirnov- and Shapiro-Wilk-Test for Academic Reports of the students. The Shapiro-Wilk-Test as well as the Kolmogorov-Smirnov-Test do not show a higher significance than 0.05 in any observation regarding the Environmental Attitudes observations. From these statistical tests we cannot conclude a normal distribution for the tested scales.

But we also do not have to falsify normal distribution. The Kolmogorov-Smirnov- and Shapiro-Wilk-Test work well as analytical tests, if the samples are small or medium sized. But when the samples are larger (e.g., 70-100 or more) even minimal deviations from a normal distribution can lead to a rejection of the normal distribution according to the test-results. Therefore it is advisable to have an additional graphical analysis on normal distribution with larger samples, if the Kolmogorov-Smirnov- or the Shapiro-Wilk-tests reject the null-hypothesis of normal distribution. (Field, 2009, p.143).

8.2.1.2 Histograms with bell-shaped normal distribution curve

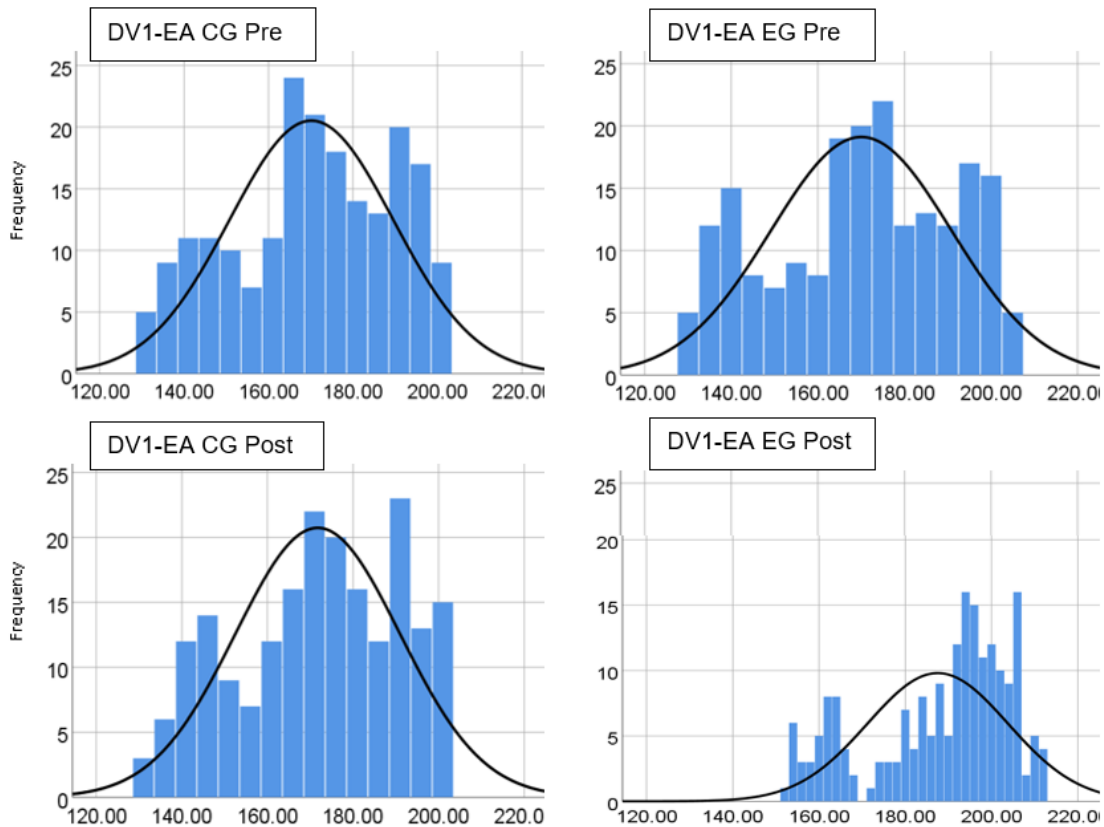


Figure 36: Histogram of the frequency distribution of pre- and post-test scores with normal distribution curve for EG and CG for DV1-EA

The figure 36 is from SPSS25 show a normal curve distribution (bell-shaped curve) projected over the frequency of the pre- and post-test values of the Environmental Attitudes of the students from the Experimental Group and the Control Group. The bars in the graphs are higher the more students are counted with that value. The test values of the Environmental Attitudes Scale are found on the horizontal-axis, while on the vertical-axis the occurrence of the specific value is displayed.

The shape of the distributions seems to come close to the bell-shaped form of the normal distribution. This indicates that the pre- and post-test values of the Experimental Group

and the Control Group are normally distributed in regard to the Environmental Attitudes of the students.

8.2.1.3 Skewness and Kurtosis

Skewness and Kurtosis are statistical key figures that describe whether the test-data is normally distributed. They throw light on the graphs and examine whether a drawn graph is similar or differs from a graph of the normal distribution (the Gaussian bell curve).

Skewness measures the symmetry of the distribution curve. The scores of the observation should be rather equal distributed above, as below, the Mean. For the normality of the data, the tail of the normal curve should not be elongated, either towards the positive side or negative side (of the x-axis). Unskewed datasets shows the most frequent scores in the middle. Skewed datasets display the most frequent scores (with the highest bar) on either one side of the graph.

Kurtosis measures the flatness of the normal distribution curve. The curve should not be peaked compared to the normal distribution or flatter than normal, so approx. optimal flatness is required.

Table 23. Descriptive statistical analysis related to the test scores of Experimental Group (EG) and Control Group (CG) for Environmental Attitudes (DV1-EA)

Ob- servation	Mean	Standard- Deviation (SD)	Minimum value	Maximum value	Range (R)	Skewness (SK)	Kurtosis (Ku)	Std. Error of Means (SEM)
DV1-EA CG Pre	170.16	19.44	131.00	202.00	71.00	-0.322	-0.910	1.374
DV1-EA EG Pre	170.01	20.87	130.00	204.00	74.00	-0.236	-0.997	1.476
DV1-EA CG Post	171.75	19.24	131.00	203.00	72.00	-0.330	-0.910	1.360
DV1-EA EG Post	187.52	16.28	152.00	211.00	59.00	-0.694	-0.652	1.151

Table 23 shows the descriptive statistical analysis related to the test scores of Experimental Group (EG) and Control Group (CG) for Environmental Attitudes (DV1-EA).

One method of analyzing Skewness and Kurtosis is to see if the absolute value of Skewness and Kurtosis is below 1. Then the data is not skewed nor has a Kurtosis. This is the case with the data of the Environmental Attitudes Scale (DV1-EA) for both groups and observations (pre- and post-test).

Another method involves the Standard Errors of the Skewness (SES) and the Kurtosis (SEK).

Table 24. Skewness and Kurtosis, their Standard Error and Boundaries for DV1-EA

Ob- servation	Std. Error of Skew ness (SES)	Lowest Limit (LLSK)	Skewn ess (SK)	Highe st Limit (HLSK)		Std. Error of Kurtosi s (SEK)	Lowest Limit (LLKu)	Kurtosi s (Ku)	Highest Limit (HLKu)
DV1-EA CG Pre	0.172	-0.516	-0.322	0.516		0.342	-1.027	-0.910	1.027
DV1-EA EG Pre	0.172	-0.516	-0.236	0.516		0.342	-1.027	-0.997	1.027
DV1-EA CG Post	0.172	-0.516	-0.330	0.516		0.342	-1.027	-0.910	1.027
DV1-EA EG Post	0.172	-0.516	-0.694	0.516		0.342	-1.027	-0.652	1.027

The table 24 shows the Standard Error of Skewness (SES) for the two groups (EG, CG) and observation times (pre-test, post-test). Out of this value (SES) the upper and lower boundaries are formed by multiplying the value one time with +1 for one boundary and with -1 for the other boundary, than the term is multiplied²⁷⁹ with 3. The value of Skewness (SK) should lay in between these boundaries. The same procedure is applied on the Standard Error of Kurtosis (SEK) and the Kurtosis (Ku).

²⁷⁹ The multiplier can be 2 instead of 3 (Price, 2000).

Price, I. (2000). *Determining if skewness and kurtosis are significantly non-normal*. Webstat: School of Psychology University of New England. https://webstat.une.edu.au/unit_materials/c4_descriptive_statistics/determine_skew_kurt.html

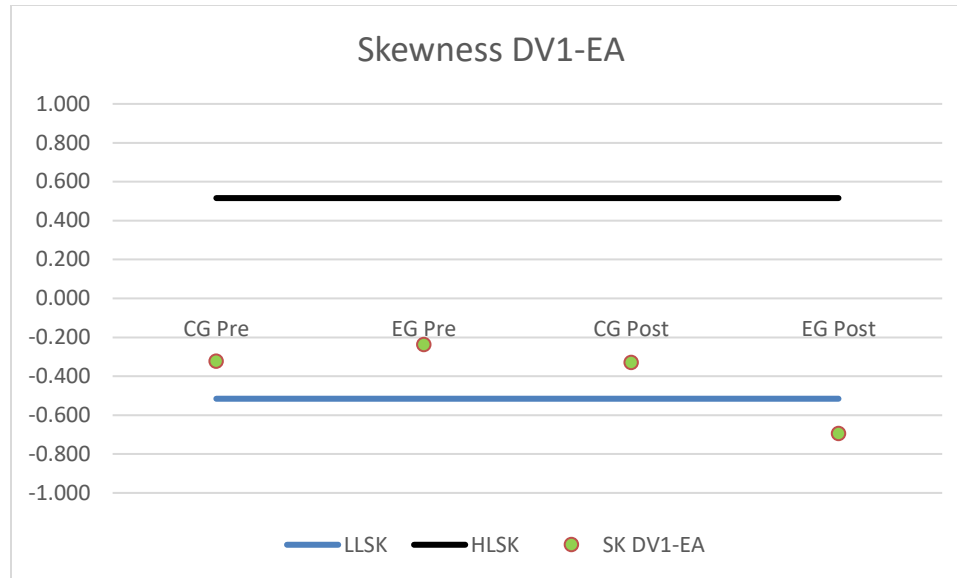


Figure 37: DV1-EA Skewness values for EG and CG in pre- and post-test

The figure 37 illustrates the data of the table 24. After multiplying the value of the Standard Error of Skewness (SES 0.172) with 3, the observed value is found 0.516. After making this the value boundaries from the negative and positive side (-0.516 to +0.516), the values of Skewness (CG Pre--0.322, EG Pre-0.236, CG Post -0.330) for the examination of the Environmental Attitudes (DV1-EA) fall in between these boundaries. This shows that the data is not skewed, and the data is found normally distributed. The skewness value of EG Post (-0.694) is slightly below the lower boundary. Since it is not much and the three other tests did not show any skewness, it can be assumed that a slight skewness is possible, but is generally not regarded as very skewed.

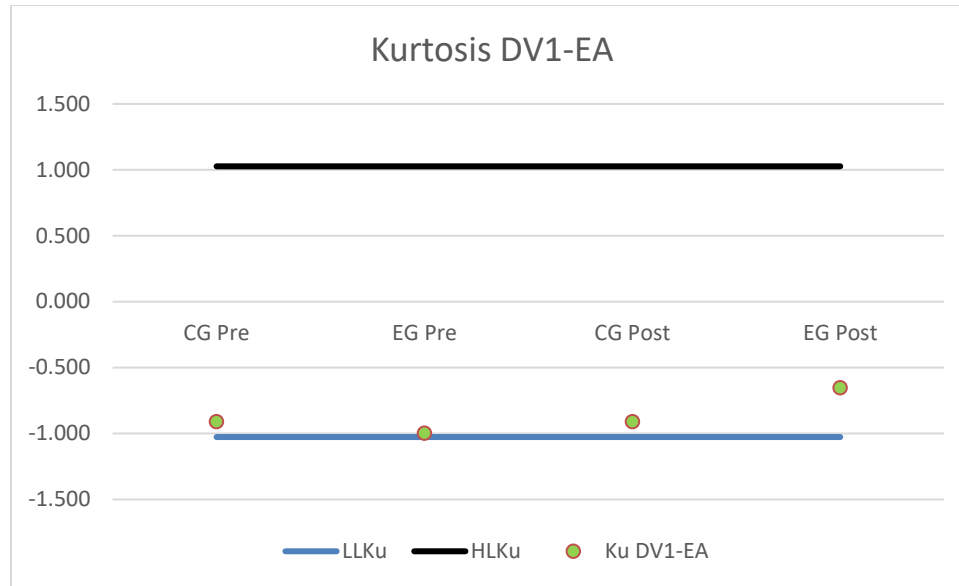


Figure 38: DV1-EA Kurtosis values for EG and CG in pre- and post-test

The figure 38 displays the Kurtosis values for EG and CG in pre- and post-test for DV1-EA.

After multiplying the value of the Standard Error of Kurtosis (0.342) with 3, the observed value is found 1.027. This absolute value sets the upper and lower boarders (-1.027 to +1.027).

The values of Kurtosis (CG Pre--0.910, EG Pre-0.997, CG Post -0.910 EG Post -0.652) fall in between this range. All values are below zero, so the distribution is called platykurtic²⁸⁰, meaning broad – the distribution shows thinner tails, meaning less values at the outer borders and mor in the middle. All the values for DV1-EA are in between the boundaries. This shows that the data is not kurtotic and is found normally distributed.

²⁸⁰ Datasets with zero excess kurtosis are known as mesokurtic. The most prominent example is the normal distribution. Distributions with positive kurtosis are labeled as leptokurtic, meaning slender, as the tails of the graphs are fatter because of more values at the upper and/ or lower part.

8.2.1.4 Graphical Analysis (QQ-plot) of normal distribution for the Environmental Attitudes

Quantile-Quantile-plots use the quantiles of the real, observed data as well as the quantiles of the expected, normal distribution. The x-axis displays the observed values and the y-axis the expected values. The drawn line consists of the point where the observed value is the same as the expected value. The closer the observed values (dots) are to expected (normally distributed) values – the closer the dots are to the line - the smaller is the difference of the observed distribution and the normal distribution.

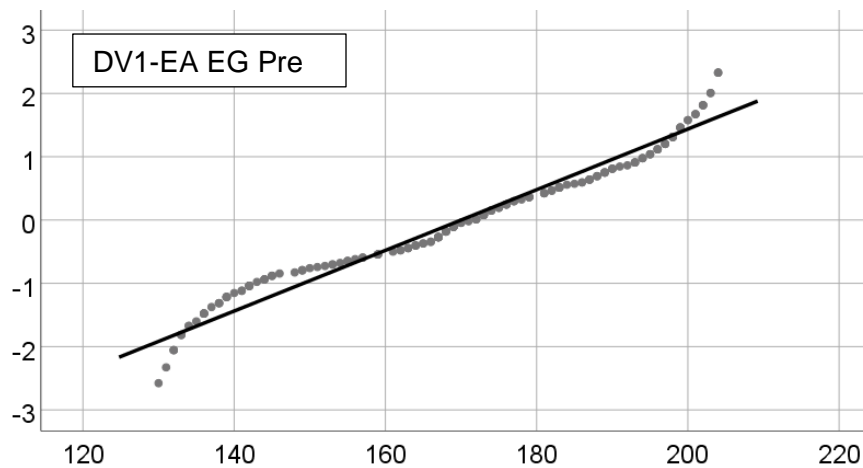


Figure 39: QQ-plot for DV1-EA EG in the pre-test

The figure 39 shows the graphical representation of QQ-plots related to pre-test scores of the Experimental Group (EG) in Environmental Attitudes (DV1-EA) to test the normality of the data. The Graph shows the normality of the pre-test scores of the Experimental Group (EG) in their Environmental Attitudes (DV1-EA). All the scores are scattered near to the standard desired line of normality. This proves that the DV1-EA pre-test scores of EG are normally distributed.

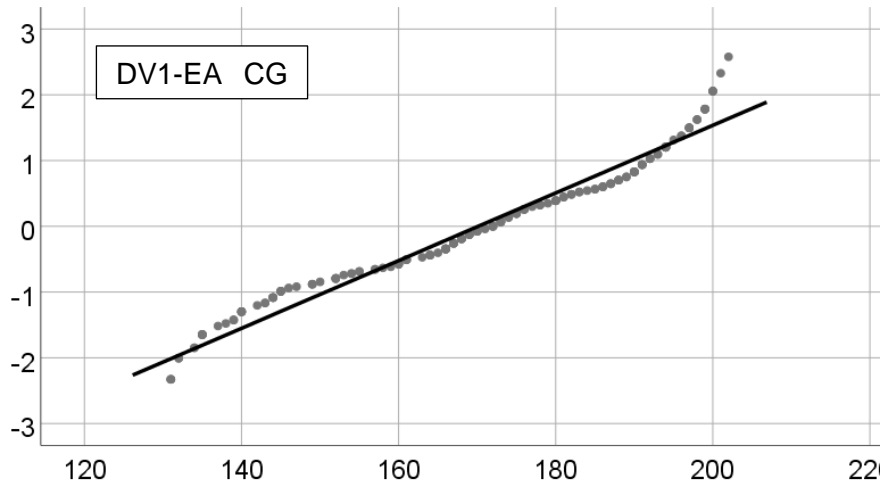


Figure 40: QQ-plot for DV1-EA CG in the pre-test

The figure 40 shows the graphical representation of QQ-plots related to pre-test scores of the Experimental Group (EG) in Environmental Attitudes (DV1-EA) to test the normality of the data. The Graph shows the normality of the pre-test scores of the Experimental Group (EG) in their Environmental Attitudes (DV1-EA). All the scores are scattered near to the standard desired line of normality. This proves that the DV1-EA pre-test scores of EG are normally distributed.

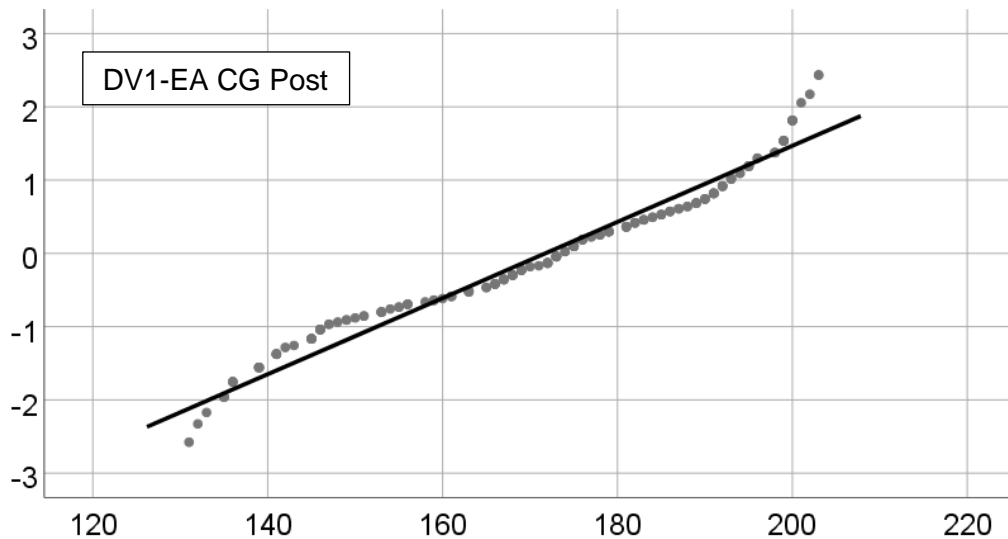


Figure 41: QQ-plot for DV1-EA CG in the post-test

The figure 41 shows the graphical representation of QQ-plots related to pre-test scores of the Experimental Group (EG) in Environmental Attitudes (DV1-EA) to test the normality of

the data. The Graph shows the normality of the pre-test scores of the Experimental Group (EG) in their Environmental Attitudes (DV1-EA). All the scores are scattered near to the standard desired line of normality. This proves that the DV1-EA pre-test scores of EG are normally distributed.

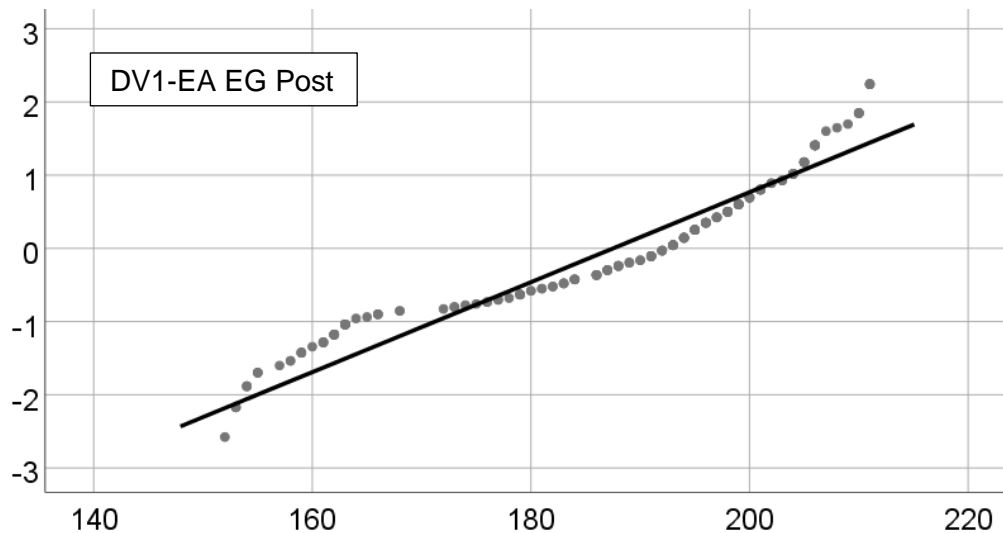


Figure 42: QQ-plot for DV1-EA EG in the post-test

The figure 42 shows the graphical representation of QQ-plots related to pre-test scores of the Experimental Group (EG) in Environmental Attitudes (DV1-EA) to test the normality of the data. The Graph shows the normality of the pre-test scores of the Experimental Group (EG) in their Environmental Attitudes (DV1-EA). All the scores are scattered near to the standard desired line of normality. This proves that the DV1-EA pre-test scores of EG are normally distributed.

Taken together, all the QQ-plots showed at the lower and the upper end dots being a bit more distant from the standard line. This could indicate the existence of some outliers there, but in the box-plot examination of the first subchapter no outliers were found.

All the QQ-plots related to the dependent variable (DV1-EA) did show the dots (representing the observed values) closely distributed around the line (representing the expected values that would occur if the data was normal distributed). This proves that the DV1-EA test scores are normally distributed.

From the calculated key values and the graphical analysis of the DV1-EA data a normal distribution of the data for the Environmental Attitudes can be assumed.

8.2.2 Findings regarding the characteristics of the assumed influence factor pre-test (covariate) – Observation of linearity, homogeneity, and regression lines for the DV1-EA data

The logic assumption made earlier was, that the pre-test result will influence the observed post-test results, in a way that an individual in with a high score value in the pre-test (resembling a high level of positive Attitudes towards the Environment) will also be highly likely to show high score values in the post-test.

There should be a linear relationship between the dependent variable (post-test) and the covariate (pre-test), to be able to eliminate that influence when using the ANCOVA method later. To check this, scatter diagrams with regression lines were done and examined.

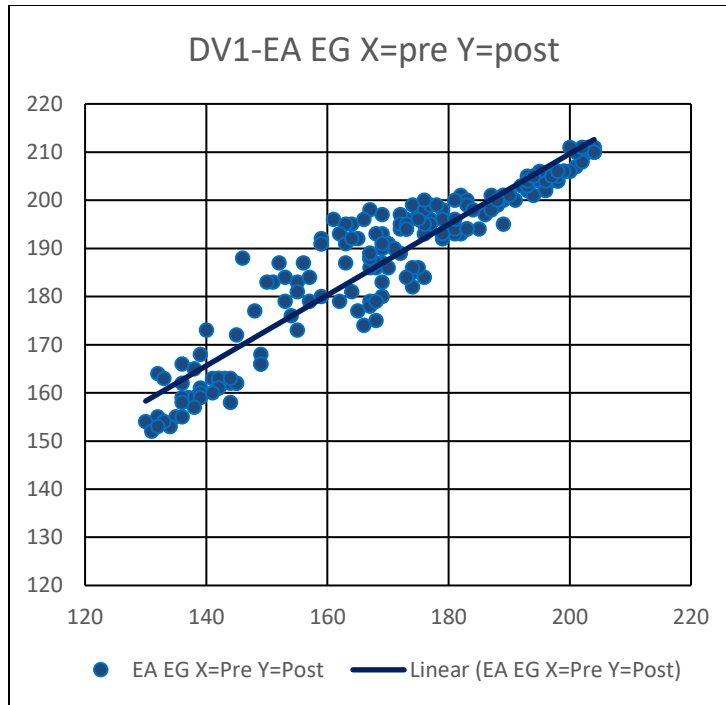


Figure 43: Regression line of pre-post-test values of DV1-EA for EG

In the graph the coordinate of each dot is given by the pre-test result, of a student from the Experimental Group in regard to DV1-EA, on the x-Axis and the post-test results of the same student determine the point's place on the y-axis. The dots in figure 43 (resembling the pre- and post-test results) are here grouped in a cloud. A cloud behavior indicates that there is a correlation between the pre-test result and the post-test result of the same student – the outcome of the pre-test has an influence on the outcome of the post-test.

This particular kind of cloud indicates that students with a lower result in the DV1-EA pre-test achieved a lower result in the post-test, compared to a student who had already higher points in the pre-test and showed even higher points in the post-test. By mathematic procedures, the computer software SPSS calculates a least distance line through the cloud of results. This line (respective the line equation) makes it possible to predict the outcome of a post-test result of a student when we know his/her pre-test results.

In other words, this graph shows the linearity between the dependent and covariate variable, which means the linearity between the post-test and pre-test values of the Environmental Attitudes (DV1-EA), for the Experimental Group (EG).

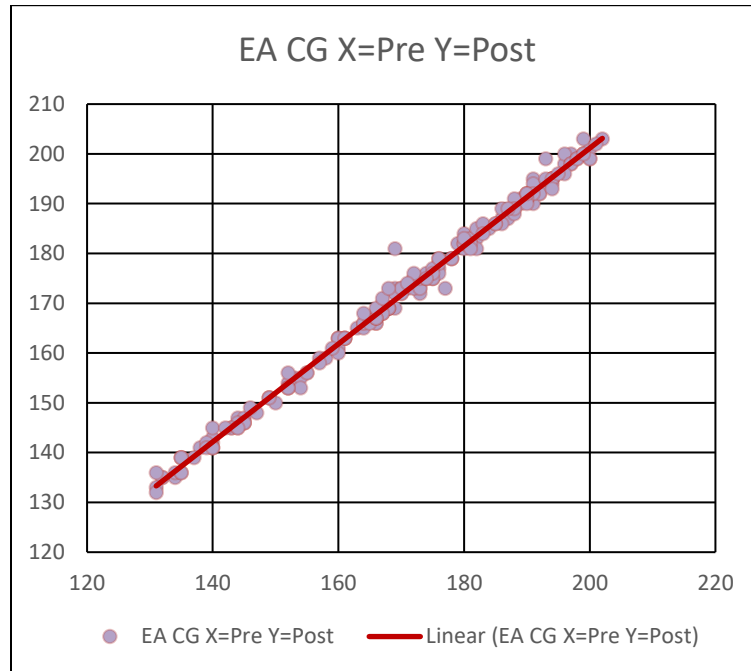


Figure 44: Regression line of pre-post-test values of DV1-EA for CG

This graph (figure 44) shows the linearity between the dependent and covariate variable, which means the linearity between the post-test and pre-test values of the Environmental Attitudes (DV1-EA), for the Control Group (CG).

The relationship between the covariate and the dependent variable should be the same in the Experimental (EG) and in the Control Group (CG). If the graphs are having the same slope, the regression lines run nearly parallel, then the assumption of homogeneity of the regression slope is fulfilled.

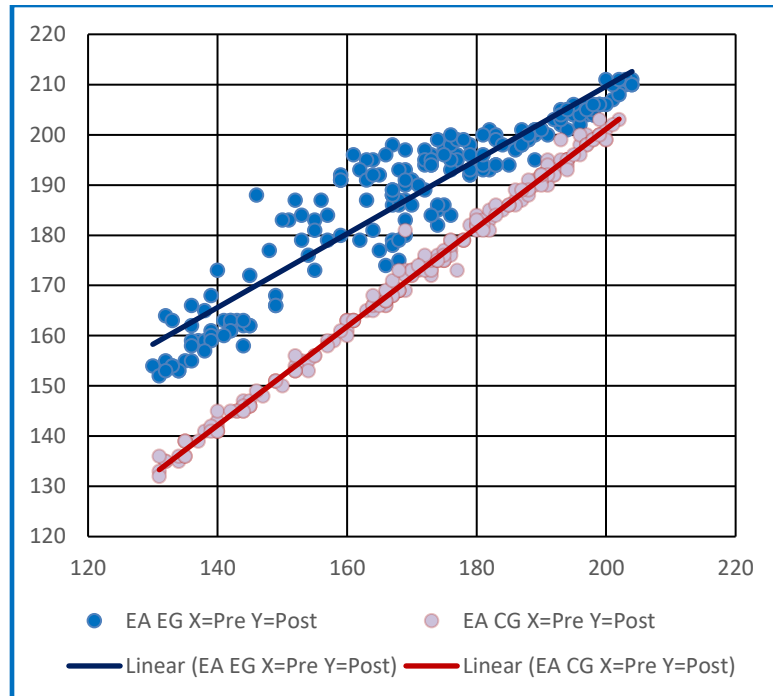


Figure 45: Regression line of pre-post-test values of DV1-EA for EG and CG

This graph 45 shows the combination of the two graphs. The Experimental Group (EG is displayed in the blue color, the Control Group is displayed in the red color. It shows the homogeneity of regression slopes.

Findings related to the assumption of linearity:

- 1) This graph shows linearity between dependent and covariate, means between post and pre-scores in relation to EG (first graph).
- 2) This graph shows linearity between dependent and covariate, means between post and pre-scores in relation to CG (second graph).

Findings related to the assumption of homogeneity of regression slopes between EG and CG:

The later graph shows the homogeneity of the regression slopes (both previous graphs joined together). The regression lines are almost parallel.

8.2.3 Summary of the assumption tests for ANCOVA of the DV1-EA data

The graphical analysis of the regression lines showed linearity and homogeneity of the pre- and post-test data for the Experimental (EG) and the Control Group (CG).

All the tables and figures – except the formal tests of Kolmogorov Smirnov and Shapiro-Wilk-Test, which is known to have some “weaknesses” when it comes to large samples, like the researched here – in this chapter showed that the data of the Environmental Attitudes Scale is normally distributed in case of the pre-test and post-test scores of the Experimental Group and the Control Group. The graphical analysis of the Boxplots, QQ-plots and normal curve, frequency distribution histograms also showed that the data is normally distributed.

Since the required assumptions to apply ANCOVA are found to be fulfilled, the analysis of covariance is applied to find out the effect of meditation on the dependent variable Environmental Attitudes (DV1-EA), measured through the Environmental Attitudes Scale.

8.3 Analysis of the real effect of Sahaja Yoga Meditation on the Environmental Attitudes (DV1-EA)

8.3.1 Eliminating side-effects to get the real effect size of the intervention on Environmental Attitudes (DV1-EA) through ANCOVA

The analysis of the covariance (ANCOVA) is a sophisticated statistical method that can compare the outcome of two test groups (EG and CG), by comparing the characteristic key-measure of the two Means and at the same time controlling the predictable influence of the pre-test-results on the post-test outcomes. Like in an analysis of the variances

(ANOVA) the difference of the Means is calculated by looking at the Variances with the help of F-tests²⁸¹. The error variance is reduced by eliminating the influence of distortion variables/ covariances. Here the pre-test is taken as the covariance. The results of the ANCOVA show the significance of the difference of the results between Experimental and Control Group, meaning if the difference is remarkable high enough to be attributed to the intervention or in case of no significance, if a difference between the Means of EG and CG in the post-test could also have appeared just by chance. The ANCOVA also informs in how far this difference is very unlikely to appear by random chance, but in how far it can be completely attributed to the intervention used. The Partial Eta-Square (PESQ) gives the size of the effect. The PESQ value tells how much of the observed effect can be explained through the intervention.

Table 25. Analysis of co-variance (ANCOVA) to compare the adjusted means of EG and CG in Environmental Attitude (DV1-EA)

Source of variation	Sum of Squares (SS)	Degree of freedom (df)	Mean Square (MS)	Value of F	Significance Value (SV) / p-value	Partial Eta-Square (PESQ)
Value of Contrast (between groups)	25482.12	1	25482.12	1107.41	0.000	0.736
Value of Error (within groups)	9135.21	397	23.01			

The table 25 reveals the results of the analysis of covariance (ANCOVA), to compare the adjusted means of the Experimental Group (EG) and Control Group (CG).²⁸² This was done to find out "What is the effect of the treatment on the post-test that is not predictable from the pre-test (i.e., conditional on the pre-test)?" (Knapp, 2009, p. 1).

The Sum of Squares (SS) is the sum of the squared Standard Deviation (SD). The SS divided through the Degree of freedom (df) gives the Mean square (MS). These measures are calculated (by the software) to perform the technique of partitioning the SS (as a

²⁸¹ F-tests are named after Sir Ronald Fisher. F-tests show the relationship between Variances. Variances are a measure for the dispersion (or scatter) of a sample. They are the counter part of central tendency measures (like Mean, Median). The Variance shows how far stretched or squeezed the probability distribution of a sample is. Variance is the square of the standard deviation.

measurement of the spread) into the parts of deviation from the Mean that are caused by the treatments and the parts of deviation that are caused by error influences. The F-test gives a ratio value of the variances between the groups and the variances within the group. If the computed p-value is small, then significant relationships exist.

The measures of the table are analyzed in greater detail in the following subchapters.

8.3.2 Significance of the effect

Every study has the potential problem of finding results and attributing them on a treatment, while in reality the results may be caused (partially) by something else, e.g., an unknown error effect, another variable, effects of the choice of the sample or the show results may even have appeared just by chance. Through various procedures these problem fields are tried to reduce.

The level of significance is an imaginary line that shows, the occurrence of an event is by chance (this means not due to the treatment) or not by chance (this means due to the treatment). Different scientific disciplines have different common standards that they find acceptable (or very unlikely) for the probability that an error occurs. Engineering and medicine fix their level of significance at 99%, as they assume to operate in controlled conditions. Social Sciences and Management Research fix 95% as their level of significance.

The value of F (1107.41) is found significant, because $p=0.000 < 0.05$. This proves that there exists a significant difference between the Adjusted Means of the Experimental Group (EG) and the Control Group (CG) and a significant effect of Sahaja Yoga Meditation (SYM) on the Environmental Attitude (DV1-EA) was found in this research.

8.3.3 Level of assignability of the found effect to the intervention.

The Partial Eta Square is a measure that tells us in the context used in this research, how much of the variation – the difference in the effect sizes – is induced through the dependent variable (Sahaja Yoga Meditation), after eliminating the amount of variation that could be explainable by another variable, the covariate, in our case the pre-test results.

The partial eta-square value (PESQ, also known as R^2) “is the ratio of the variance due to the treatment and the total variance. It produces a rough estimate of the of the size of the effect. [...] The value of R^2 will vary between 0.00 and 1.00 depending on the relative size of the treatment effects. It is a measure of the proportions of the total variance that is explained by the treatment effects” (Vincent, 1999, p.165-166).

The partial eta-square value (PESQ) found is 0.736. This means 73,6% of the change in Environmental Attitudes can be explained through the treatment with meditation.

8.3.4 Size of the effect

The effect size that the intervention had on the dependent variable Environmental Attitudes is calculated by taking the difference of the results of the Experimental Group and the results of the Control Group. In our case we take the measures of the Adjusted Means of EG and CG.

Table 26. Adjusted means of Experimental Group and Control Group in Environmental Attitudes (DV1-EA)

Groups	Adjusted Means	Standard Error (SE)	95% Confidence Interval (CI)	
			Lower Bound	Upper Bound
Experimental Group (EG)	187.71	0.34	187.04	188.37
Control Group (CG)	171.74	0.34	171.08	172.41

The table 26 reveals the results of the Adjusted Means related to the Experimental Group (EG) and Control Group (CG). In case of the Experimental Group, the observed Adjusted Mean is 187.71 (along with the Standard Error (SE) of 0.34 and Confidence Interval (CI) of 187.04 – 188.37). For the Control Group (CG), the observed Adjusted Mean is 171.74 (along with the Standard Error (SE) of 0.34 and Confidence Interval (CI) of 171.08 – 172.41).

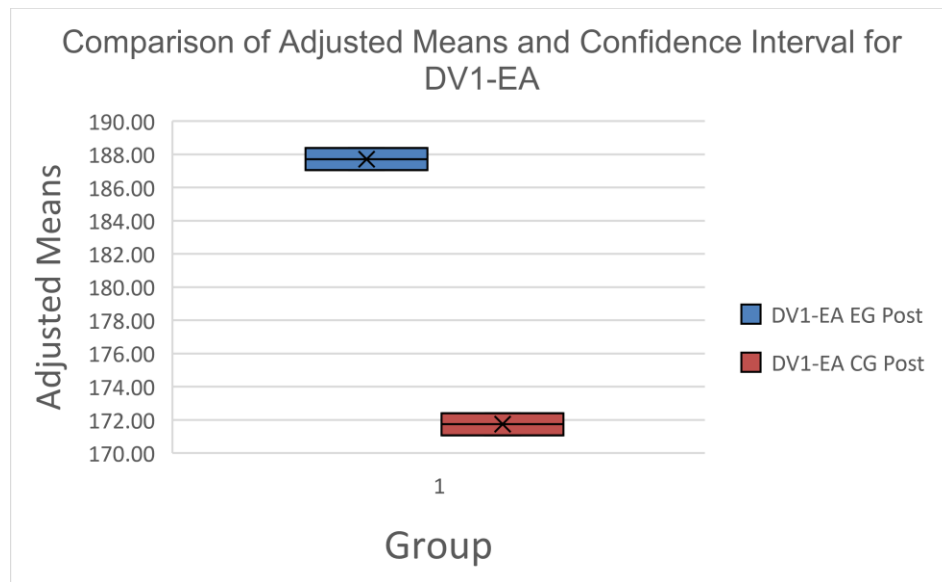


Figure 46: Boxplot of Adjusted Means values and Confidence Intervals (CI) of DV1-EA data for EG and CG

The boxplot in figure 46 visualizes the values of the previous table, namely the Confidence Intervals (CI) and the values of the Adjusted Means for the Experimental Group (EG) and the Control Group (CG) regarding the Environmental Attitudes (DV1-EA) of the students.

Since, a significant effect of Sahaja Yoga Meditation (SYM) was found on the results of the Environmental Attitudes (DV1-EA), the Adjusted Means are compared to find out the effect. Since the Adjusted Mean of the Experimental Group (187.71) is found greater than the Adjusted Mean of the Control Group (171.74). The intervention with Sahaja Yoga Meditation (SYM) is proved to bring a change in the Environmental Attitudes.

A significant difference between the effect of SYM is found among EG and CG. The difference between the Adjusted Means of the Experimental Group and the Control Group for the Environmental Attitudes (DV1-EA) in this research is 15.96.

8.4 Placement of the results into context

8.4.1 Comparing the Means with the norm values of the Environmental Attitudes Scale (DV1-EA)

The Environmental Attitudes Scale – like many other scales – consists of several statements regarding the research issue. The individuals tested note down for each statement degrees of agreement to the statement. According to their level of agreement to a statement scoring points are given. These score values are added up for the whole test of everyone. So according to the scale chosen for different research topics the maximum and minimum values possible will differ and the interpretation of a reached score level will differ.

In the previous subchapters the Adjusted Means of the two groups EG and CG as well as the difference between the groups were calculated. To be able to classify the results it is necessary to know how different score values shall be interpreted. Such an interpretation guide is given with most of the professional test scales. For the understanding of the scale, by the researcher and the reader of the research, it is helpful, if the scale interpretations follow generally accepted rules.

In addition, well-tried professional tests provide norm values. These are reference values that were found out by previous researchers doing their studies. Using these references (as norms) to compare the own research results is of great help for the analysis of a study. It shows the embedment of the own research results into a larger group of previous research work done by the scientific community and helps to classify the research results. To get high credibility and comparability for the own research it is recommended to use well-tried tests that have been used in similar group formations alike to the own research.

The Environmental Attitudes Scale provides “standard scores with nine categories” (short “standard nine” or “stanine”), which is a widely used and accepted norm of division of probability scales. The Environmental Attitudes Scale (DV1-EA) has developed stanine grade norms for male and female population, occupational status, age and educational studies. The normative groups were all from India. For the choice of the scale, it was important to have a scale that has already covered research test and field research credibility with comparable socio-demographic factors and cultural background as this research has.

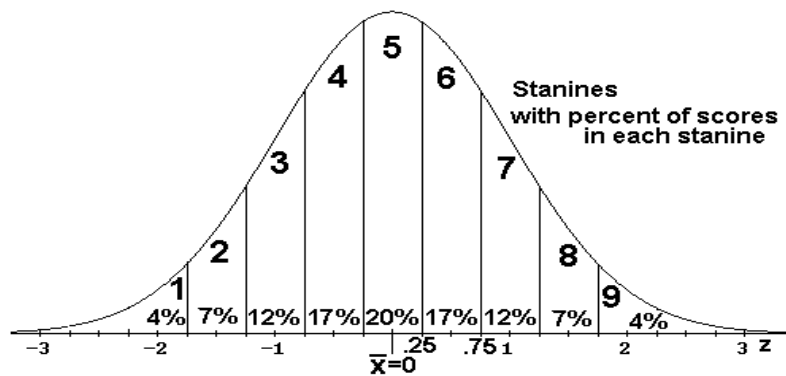


Figure 47: Bell shaped graph of stanine grade norms, with a normal distribution, a mean of 0 and a standard deviation of 1 (Source: Azzolino, 2005)²⁸³

Stanine grade norms divide a normal distribution into nine intervals showed in figure 47. The mean is in the center of the fifth interval. Each interval has a width of 0,5 standard deviations, except for the interval 1 and 9 which include the tails of the distribution, meaning all scores below or above the border.

The stanine grades are developed around the mean value. According to the described procedure the scores are allocated. This can lead to different high scores and stanine grade levels, depending on the means of the normative group.²⁸⁴ The norm high score

²⁸³ Azzolino, A. (2005). Stanine - Statistical Standard Nine Normal Distribution. Middle Ground. <http://www.mathnstuff.com/math/spoken/here/2class/90/stanine.htm>

²⁸⁴ The scale of the EAS values ranges from 61 to 244 total raw value points possible. This results in a possible range of 183 points. The polarization around 61 points corresponds to an extremely

value for students of the VIII-XII class in India is 223. This meets exactly the sum of the maximum scores of the six subcategories reached in our research sample: 223. (While the maximum number reached by an individual was 211.) The similarity of the high score numbers of the normative group and the sample can be seen as an indicator for the aptitude of the chosen scale for the sample. The appropriateness of the scale for Indian students was an important factor for the choice of the scale. The questions of the scale must meet the living circumstances of the participating individuals. For example, a 9th class student living in Paris, France will have complete different daily experiences regarding the environment compared to a 9th class student from Rajahmundry, India – therefore different scales will be the chosen, according to the sample of the research.

Table 27. Ranges of raw scores for Stanine Grades for adolescents (14-18), class 8-12 standard students

Stanine Grade	Level of Environmental Attitude	from score	to score	from %	to %	width of the Interval
9	Extremely High	205	223	88.3%	99.4%	11.0%
8	High	187	204	77.3%	88.3%	11.0%
7	Above Average	169	186	66.3%	76.7%	11.0%
6	Average	151	168	55.2%	65.6%	11.0%
5	Average	133	150	44.2%	54.6%	11.0%
4	Average	115	132	33.1%	43.6%	11.0%
3	Below Average	97	114	22.1%	32.5%	11.0%
2	Low	79	96	11.0%	21.5%	11.0%
1	Extremely Low	61	78	0.0%	10.4%	11.0%

The table 27 shows the stanine grade norms for the raw scores of the Environmental Attitude Scale (DV1-EA) for class 8-12 students. The 5th stanine includes the mean of the reference group. The level of positive attitudes towards environmental issues²⁸⁵ within this 5th stanine grade are considered to be average.

low level of Environmental Attitude, while the raw value of 244 indicates the highest level of Environmental Attitude possible in the test.

²⁸⁵ The environmental and socio-cultural context of India is embedded in the wording of the statements / questions of the questionnaire.

Table 28. Means of pre- and post-test for EG and CG and their change value.

Observation	Mean pre-test	Mean post-test	Change of the means
DV1-EA EG	170.01	187.52	17.51
DV1-EA CG	170.16	171.75	1.59

The table 28 shows the pre- and post-test values of the means for the Experimental Group (EG) and the Control Group (CG) calculated by SPSS for the Environmental Attitudes Scale (DV1-EA). It also shows the difference of post-test minus pre-test – the change value of the means.

The pre-test value of the mean for EG is 170.01 and for CG it is 170.16. This corresponds to stanine grade 7, representing an above average level of Environmental Attitudes. The mean of 170 is closer to the lower bound of the grade 7 which ranges from 169 – 186. The post-test mean of the Control Group is 171,75. The change of the means for CG (1.59), establishes the group a little bit higher and more inside that above average level. The post-test value of the Experimental Group of 187.52 is situated in the next level²⁸⁶. The stanine grade 8, with the boundaries from 187-204 represents a high (positive) level of environmental attitude.

The change of one complete stanine grade level can be considered as a high impact on the students.

8.4.2 Transforming the Environmental Attitudes Scale (DV1-EA) values into a 100% scale to make the impact of the intervention on the three dependent variables comparable (intuitively easier to understand)

²⁸⁶ The Adjusted Means from the EG (187.71) and CG (171.74), that have been calculated using the ANCOVA in the previous subchapter, fall in the same stanine grade levels as the Means (from the descriptive statistics do).

The three tests for the dependent variables (DV1-EA, DV2-AA, DV3-AP) have scales of different length each. The scale of DV1-EA ranges from Minimum 61 to a Maximum of 223 possible reachable points.

To put the average scores of pre- and post-test (Mean pre-test and Mean post-test) into an easier to interpret and understand format, the researcher transformed them into percentage values (%Mean pre-test and %Mean post-test). This is done as a normative process. The difference between the %Mean post-test value and the %Mean pre-test value can be seen in the “Change in percent points” column.

Table 29. pre- and post-test values of Change in percent points, of Means, % Means with the values for Minimum / Maximum score for the observation of DV1-EA, in both of the groups (Experimental and Control Group).

Observation	Mean (pre-test)	Mean (post-test)	Min Score	Max Score	% Mean (pre-test)	% Mean (post-test)	Change in percent points
DV1-EA EG	170.01	187.52	61	223	67.29%	78.10%	10.81
DV1-EA CG	170.16	171.75	61	223	67.38%	68.36%	0.98

The table 29 shows the pre-and post-test means of the observations for variable DV1-EA, in both groups (Experimental and Control Group). Along with the minimum score and the maximum score of each test, according to the normative values, the percentage values of the means are calculated and shown ($\% \text{ Mean} = (\text{Mean Score} - \text{Min. Score}) / \text{Max. Score} - \text{Min. Score}$). The last column shows the change between % Mean post-test minus % Mean pre-test in percentage points.

The key values of the table are displayed in the following graph.

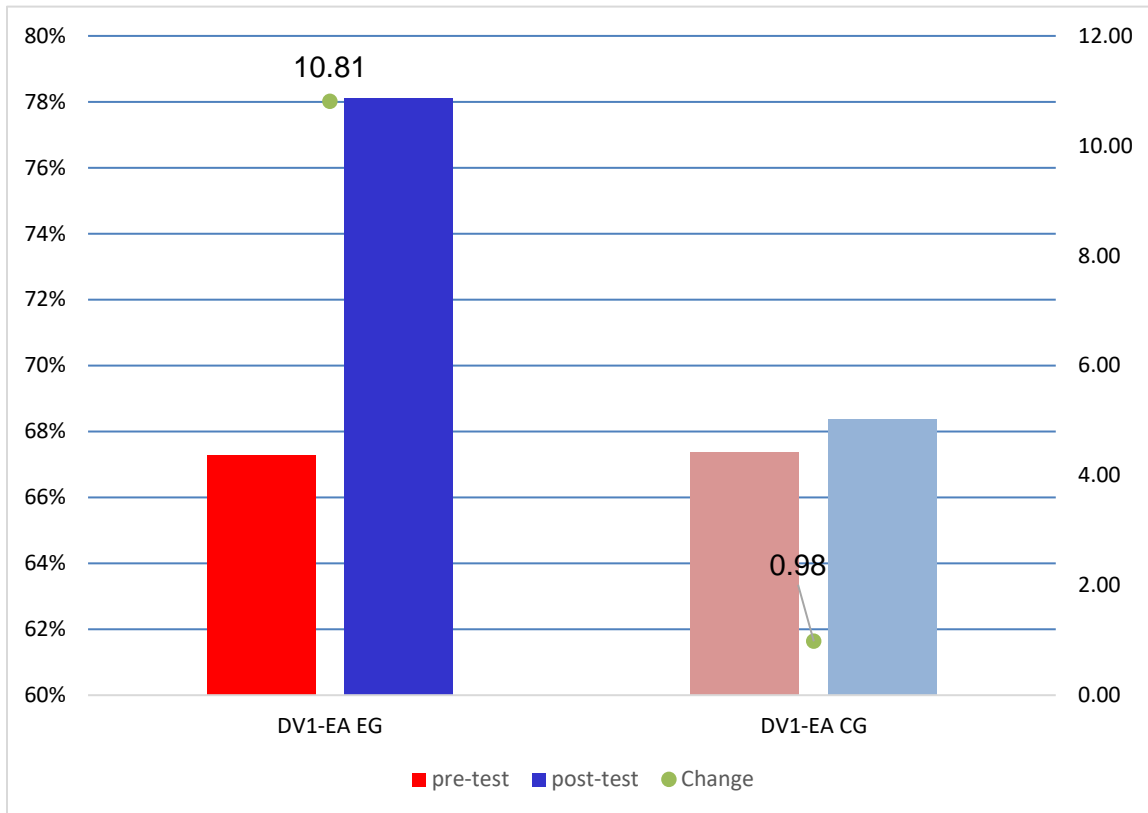


Figure 48: Normed Mean in % - Pre-Post Delta - EG & CG for DV1-EA

In the figure 48 the left y-axis, the primary axis, displays the percentage values of %Mean reached by EG and CG in the test on the dependent variable DV1. The red bar graphs represent the pre-tests, the blue bars the post-tests. The bars with bright color represent the EG, the washed out red and blue color represents the CG.

On the right y-axis, the secondary axis, the values of the change are displayed the values are represented by a green dot in the graph. In addition, the exact value of gain or loss from pre- to post-test in percentage points is given as a number in the data label above the bars belonging together.

The figure (and the table) shows that the Experimental Group (EG) gained from pre-test (67.29 %) to post-test (78.10 %) 10,81 percentage points in their environmental attitude (DV1-EA).

The Control Group (CG) gained from pre-test (67.38%) to post-test (68.36%) 0.98 percentage points in their environmental attitude (DV1-EA).

Summary and conclusions from the findings of the analysis of DV1-EA

The descriptive statistics for DV1-EA showed a change of the Mean of the Experimental Group in the post-test. Through various statistical and graphical analysis methods the data was found to be normal distributed. This means the findings of the analysis can be generalized to the whole population (of 9th graders in government schools in Andhra Pradesh²⁸⁷).

The findings of this chapter are:

- 1) Sahaja Yoga Meditation (SYM) is found to be effective in bringing a positive change regarding the Environmental Attitudes.
- 2) In this research the Mean of the Environmental Attitudes of the Experimental Group rose one complete stanine grade higher (ca. 11%) after the intervention with half a year regular Sahaja Yoga Meditation practice.
- 3) The Partial Eta-Square value (PESQ) of 0.736 justifies statistically the formulation that 73,6% of the changes in the Environmental Attitudes is explained by SYM.
- 4) The results of this research are significant and can be generalized on larger parts of the population.

²⁸⁷ According to 2020 census, Andhra Pradesh has now about 52.5 million inhabitants. In 2014 there was the separation of the Telangana state (38.4 million), that still has a similar school system and the same mother tongue Telugu. Together these states have a population of 90.9 million residents, which is more than the population of Germany (83.02 million-2019) or France (67.06 million-2019).

9 DV2-AA: Analysis of the study related to effect of meditation on Dependent Variable 2 Academic Anxiety

The analytical procedures used in this chapter and their backgrounds have been described in a detailed way in chapter 7 and chapter 9. To reduce the level of repetition that is unavoidable when analyzing three dependent variables with the same statistical instruments, the explanations of the procedures have been shortened in this chapter, partially they have been put into the footnotes.

9.1 Describing the sample with key figures - Descriptive statistics of the DV2-AA dataset

The basic idea of descriptive statistics is to condense the large amount of data into key values. The data of the DV2-AA measurement was put in the SPSS 25 software. For the observations of the Experimental and Control Group in the pre- and post-test the following statistic key values were the results found to describe the data sets.

Table 30. Descriptive statistical analysis of the pre-test and post-test results of the Academic Anxiety Scale (DV2-AA) of the Experimental Group (EG) and the Control Group (CG)

Observation	DV2-AA CG Pre	DV2-AA EG Pre	DV2-AA CG Post	DV2-AA EG Post
Measure	Value	Value	Value	Value
Mean	86.69	86.74	83.38	69.33
Standard Error of Mean (SEM)	1.05	1.07	0.92	0.92
Median	87.50	85.00	85.00	68.50
Variance	218.90	227.08	167.55	170.73
Standard-Deviation (SD)	14.80	15.07	12.94	13.07
Minimum value	60.00	60.00	59.00	47.00
Maximum value	114.00	115.00	101.00	95.00
Range (R)	54.00	55.00	42.00	48.00
Skewness (SK)	-0.07	-0.05	-0.31	0.23
Std. Error of Skewness (SES)	0.17	0.17	0.17	0.17
Kurtosis (Ku)	-1.23	-1.20	-1.28	-0.98
Std. Error of Kurtosis (SEK)	0.34	0.34	0.34	0.34

The table 30 and shows the descriptive statistics related to the scores of the Academic Anxiety Scale (DV2-AA) for the Experimental Group (EG) and Control Group (CG) for the two observations (pre-test and post-test).

The Mean²⁸⁸ value (“average score”) of the pre-tests of the CG (86.69) and the EG (86.74) are very close together. The Mean of the post test is slightly lower for the Control Group (83.38) and remarkably lower for the Experimental Group (69.33). The Median²⁸⁹ scores show the same tendency. They are the close together for CG (87.5) and EG (85.0) in the pre-test, with the same in the post-test for the CG (85.0). The Median of the post-test of the Experimental Group (68.50) is again remarkably lower, like the Mean. To comprehend

²⁸⁸ Mean is also called the expected value, which can be misleading. For example, the average income of a population can be much higher than the income that most of the people have, if there are some individuals with a very large income – that will distort the value towards the higher end (skewness).

²⁸⁹ The Median is the “middle value”. When all test results are ordered in an ascending order, the median is the score value of the observation standing at the middle position, e.g., the score value of the observation at the 50th place in the ascending order, in a sample of 100 observations. Sometimes the Median gives a better feeling what most of the “typical” observations are. Let’s take the income distribution as an example. In a sample with a small number of individuals some very high incomes values can push the average score value, the Mean, up. The Median will be closer to the earnings of most of the people than the Mean in this example.

this step down in the values of the EG post-test, we have to remember that the Academic Anxiety Scale measures high anxiety with high score and low amounts of anxiety with a low score.

The Mean and the Median do not differ very much. This can already be seen as an indicator of no or only small skewness.²⁹⁰ Even if the Means of different data sets may be nearly of the same value, data sets can be scattered differently²⁹¹. They could show a slight or a strong diversity of the data points. The Standard Deviation (SD) of the pre-test observations of CG Pre (14.80) and EG Pre (15.07) show only small differences, the same do the post-test observations on only a very little, smaller level (CG Post 12.94, EG Post 13.07).

These key measures taken together indicate an effect on the Experimental Group through the intervention.

²⁹⁰ The Skewness as well as Kurtosis will be examined more closely in the following subchapter.

²⁹¹ The Range (R) gives the span width of the values, it is calculated by the subtraction of the Minimum value from the Maximum value. The Range alone could be misleading, for example these values could come from extreme outliers. Other key values that contain all score values and describe the diversity of the data set are the Standard Error of the Mean, the Variance and the Standard Deviation.

The Variance is calculated by the squared distances to the mean from each score, added up and divided by the quantity of the score values. The squaring involved make the Variance value difficult for intuitive understanding but brings some mathematical advantages.

The Standard Deviation (SD) solves the problem of intuitive understanding. It is the square root of the Variance. If the Standard Deviation (SD) is added and subtracted from the Mean value, these score values span a section around the Mean, where most of the observed values can be found. If the Data is normally distributed around 2/3 of the observed values are in this segment.

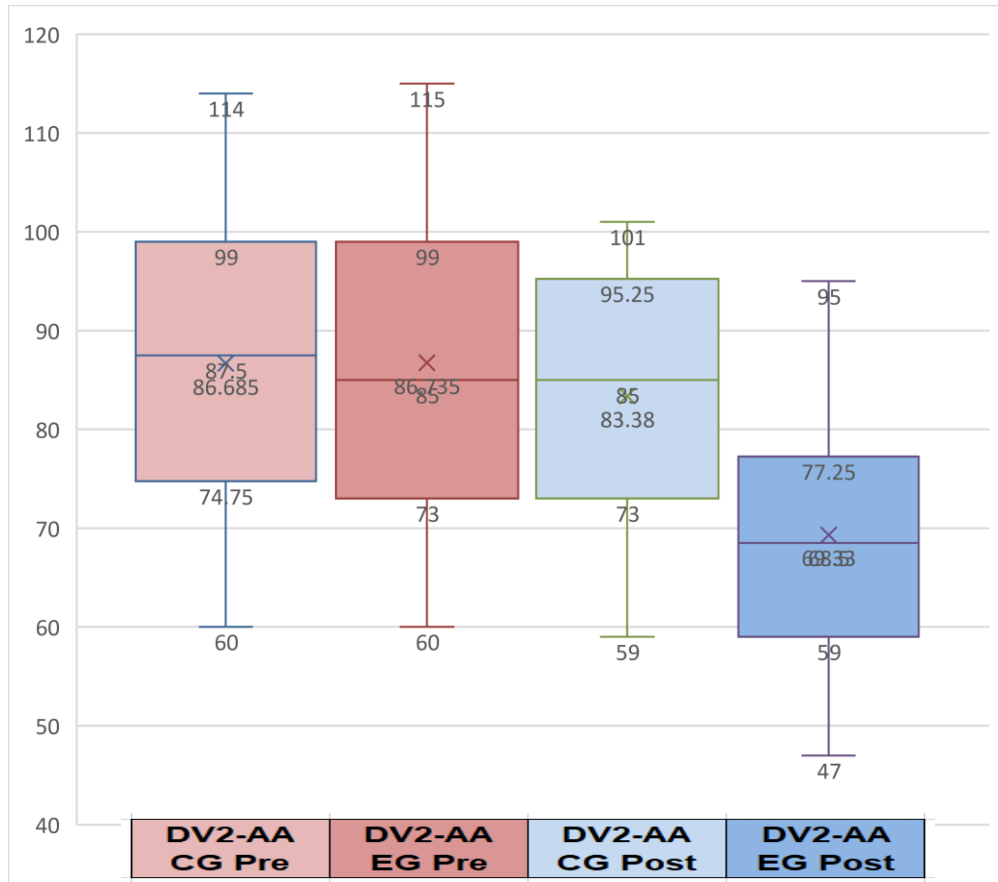


Figure 49: Boxplot diagram for the descriptive statistics of Academic Anxiety (DV2-AA)

The Figure 49 shows the boxplot diagram of the descriptive statistics related to the scores of the Academic Anxiety Scale (DV2-AA) for the Experimental Group (EG) and Control Group (CG) for the two observations (pre-test and post-test). The diagram was done with Excel, therefore the values differ slightly from the table calculated by SPSS²⁹².

The Mean is given by the “X” sign. The Median is given by the horizontal line within the box. The size of the boxes is determined through the 1st quartile (Q₁ or 25th percentile) as the lower border and the 3rd quartile (Q₃ or 75 percentile) as the upper border. These quartiles are the medians of the lower and the upper half of the dataset are also used to

²⁹² SPSS is considered to deliver the better mathematical results, while Excel is better with the diagrams.

define outliers²⁹³. The boxplot diagram shows no outliers, therefore the “antennas” (whisker) give the Minimum and Maximum value of each observation²⁹⁴.

The boxplot contributes the educated guess mentioned earlier, that the intervention with Sahaja Yoga Meditation showed an effect on the Experimental Group. The boxplots of the pre-test observations of CG and EG and the post-test of CG seem to be obviously different to the post-test data from the Experimental Group (EG). The box plots show no indication to falsify normal distribution and no outliers are shown.

In the following subchapters it will be examined, if the data of our sample can be found normally distributed, as this would indicate that our sample can be seen representative for the population (meaning all 9th graders in government schools in Andhra Pradesh) and the research results then could be generalized. Also, this set of examinations is necessary to test the assumptions of the Analysis of the Covariance. By the ANCOVA we want to find out, in more detail and accuracy, the effect of the meditation intervention and if the shown effect can be considered significant. The magnitude of the shown effect will be discussed and classified.

9.2 Pre-Analysis: Testing Assumptions of the DV2-AA data for the applicability of appropriate statistical tests

9.2.1 Testing Normality of the DV2-AA data

The tested samples of EG and CG should represent the population (or at least that part of the population that we are aiming to cover with our research). Therefore, our sample

²⁹³ Outliers are defined as follows. The box width spanned by the 1st and 3rd quartile shall be multiplied by 1.5 and added on top or subtracted for the lower boundary. Score values above or below are considered to be outliers – abnormal occurrences.

²⁹⁴ If there are outliers, the “antenna” (whisker) shows the next bigger value for outliers below and the next smaller value for outliers above the box.

should show roughly the same proportions of people with low, middle and high anxiety as in the large population²⁹⁵, which is per se normally distributed.

The findings related to the assumption of normality, for the use of ANCOVA on the Academic Anxiety (DV2-AA) are:

9.2.1.1 Kolmogorov-Smirnov and Shapiro-Wilk-Test

The Null-Hypothesis of the Kolmogorov-Smirnov-Test and the Shapiro-Wilk-Test is that the data is normal distributed. If the significance is higher than $p=0,05$, than the hypothesis, that the data is normal distributed, can be accepted.

Table 31. Kolmogorov-Smirnov-and Shapiro-Wilk-Test for Academic Anxiety Scale (DV2-AA)

Test / Group / Observation	Kolmogorov-Smirnov-Test			Shapiro-Wilk-Test		
	Statistic	df	Significance	Statistic	df	Significance
DV2-AA CG Pre	0.095	200	0.000	0.951	200	0.000
DV2-AA EG Pre	0.088	200	0.001	0.955	200	0.000
DV2-AA CG Post	0.140	200	0.000	0.915	200	0.000
DV2-AA EG Post	0.106	200	0.000	0.958	200	0.000

The Table 31 shows the SPSS 25 results of the Kolmogorov-Smirnov- and Shapiro-Wilk-Test for Academic Reports of the students. The Shapiro-Wilk-Test as well as the Kolmogorov-Smirnov-Test do not show a higher significance than 0.05 in any observation regarding the Academic Anxiety observations. From these statistical tests we cannot conclude a normal distribution for the tested scales.

But we also do not have to falsify normal distribution. The Kolmogorov-Smirnov- and Shapiro-Wilk-Test work well as analytical tests, if the samples are small or medium sized. But when the samples are larger (e.g., 70-100 or more) even minimal deviations from a normal distribution can lead to a rejection of the normal distribution according to the test-results. Therefore it is advisable to have an additional graphical analysis on normal

²⁹⁵ In our case we are not aiming to make predictions about the influence of meditation in whole of India or in the whole world. The focus of the research is on children from government schools in class 9 in Andhra Pradesh. So, it is "enough", if our sample is representative for children from government schools in the 9th grade in Andhra Pradesh.

distribution with larger samples, if the Kolmogorov-Smirnov- or the Shapiro-Wilk-tests reject the null-hypothesis of normal distribution. (Field, 2009, p.143)

9.2.1.2 Histograms and bell-shaped normal distribution curve

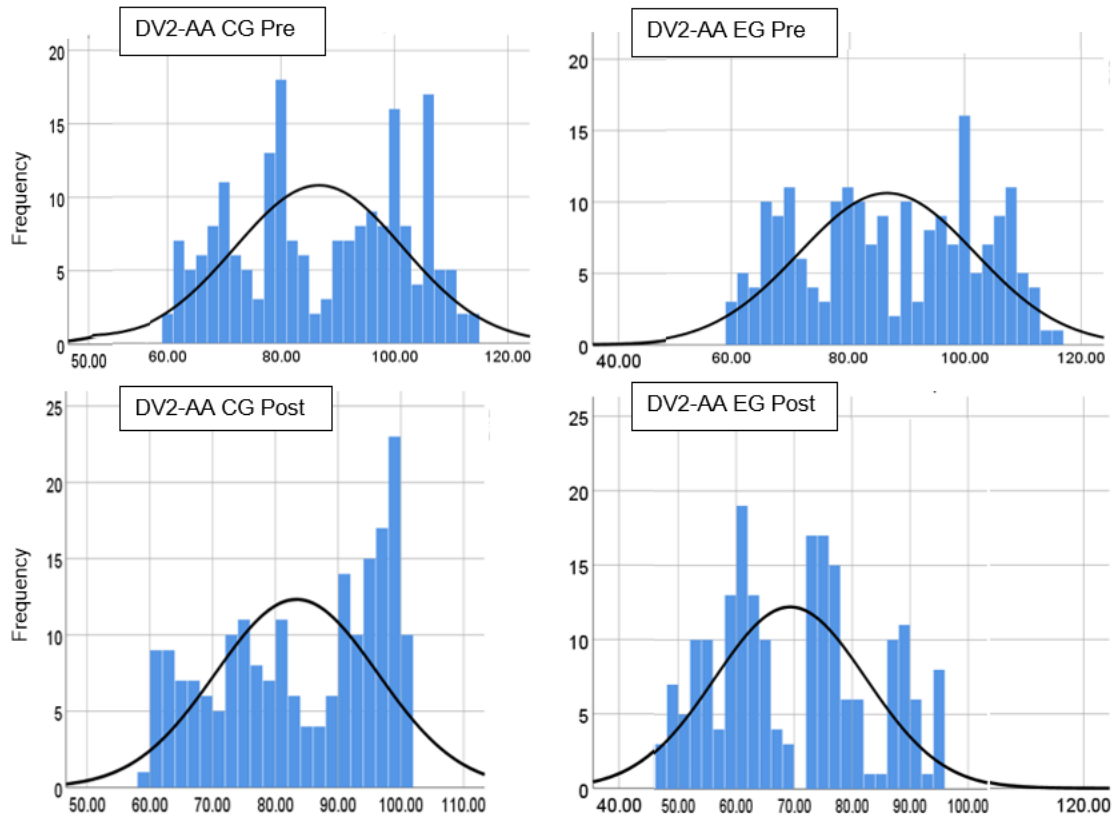


Figure 50: Histogram of the frequency distribution of pre- and post-test scores with normal distribution curve for EG and CG for Academic Anxiety (DV2-AA)

The figures 50 are from SPSS25 show a normal curve distribution (bell-shaped curve) projected over the frequency of the pre- and post-test values of the Academic Anxiety (DV2-AA) of the students from the Experimental Group and the Control Group. The bars in the graphs are higher the more students are counted with that value. The test values of the Academic Anxiety Scale are found on the horizontal-axis, while on the vertical-axis the occurrence of the specific value is displayed.

The shape of the distributions seems to come close to the bell-shaped form of the normal distribution. This indicates that the pre- and post-test values of the Experimental Group and the Control Group are normally distributed regarding the Academic Anxiety of the students.

9.2.1.3 Skewness and Kurtosis

Skewness and Kurtosis are statistical key figures that describe whether the test-data is normally distributed. They throw light on the graphs and examine whether a drawn graph is similar or differs from a graph of the normal distribution (the Gaussian bell curve).

Skewness measures the symmetricity of the distribution curve. The scores of the observation should be rather equal distributed above, as below, the Mean. For the normality of the data, the tail of the normal curve should not be elongated, either towards the positive side or negative side (of the x-axis). Unskewed datasets shows the most frequent scores in the middle. Skewed datasets display the most frequent scores (with the highest bar) on either one side of the graph.

Kurtosis measures the flatness of the normal distribution curve. The curve should not be peaked compared to the normal distribution or flatter than normal, so approx. optimal flatness is required.

Table 32. Descriptive statistical analysis related to the test scores of Experimental Group (EG) and Control Group (CG) for Academic Anxiety (DV2-AA)

Ob-servation	Mean	Standard-Deviation (SD)	Minimum value	Maximum value	Range (R)	Skewness (SK)	Kurtosis (Ku)	Std. Error of Means (SEM)
DV2-AA CG Pre	86.69	14.80	60.00	114.00	54.00	-0.068	-1.229	1.046
DV2-AA EG Pre	86.74	15.07	60.00	115.00	55.00	-0.049	-1.203	1.066
DV2-AA CG Post	83.38	12.94	59.00	101.00	42.00	-0.310	-1.276	0.915
DV2-AA EG Post	69.33	13.07	47.00	95.00	48.00	0.227	-0.984	0.924

Table 32 shows the descriptive statistical analysis related to the test scores of Experimental Group (EG) and Control Group (CG) for Academic Anxiety (DV2-AA).

One method of analyzing Skewness and Kurtosis is to see if the absolute value of Skewness and Kurtosis is below 1. Then the data is not skewed nor has a Kurtosis. This is the case with the Academic Anxiety (DV2-AA) data for both groups and observations (pre- and post-test) for the Skewness displayed in table 32. Regarding Kurtosis only the value of the Experimental Group post-test fulfills this requirement and is not kurtotic. While the other values might be kurtotic.

Another method involves the Standard Errors of the Skewness (SES) and the Kurtosis (SEK).

Table 33. Skewness and Kurtosis, their Standard Error and Boundaries for DV2-AA

Ob- serva- tion	Std. Error of Skew- ness (SES)	Lowest Limit (LLSK)	Skewn- ess (SK)	Highe- st Limit (HLSK)		Std. Error of Kurtosi- s (SEK)	Lowest Limit (LLKu)	Kurtosi- s (Ku)	Highest Limit (HLKu)
DV2-AA CG Pre	0.172	-0.516	-0.068	0.516		0.342	-1.027	-1.229	1.027
DV2-AA EG Pre	0.172	-0.516	-0.049	0.516		0.342	-1.027	-1.203	1.027
DV2-AA CG Post	0.172	-0.516	-0.310	0.516		0.342	-1.027	-1.276	1.027
DV2-AA EG Post	0.172	-0.516	0.227	0.516		0.342	-1.027	-0.984	1.027

The Table 33 shows the Standard Error of Skewness (SES) for the two groups (EG, CG) and observation times (pre-test, post-test). Out of this value (SES) the upper and lower boundaries are formed by multiplying the value one time with +1 for one boundary and with -1 for the other boundary, than the term is multiplied²⁹⁶ with 3. The value of Skewness (SK) should lay in between these boundaries. The same procedure is applied on the Standard Error of Kurtosis (SEK) and the Kurtosis (Ku).

²⁹⁶ The multiplier can be 2 instead of 3 (Price, 2000).

Price, I. (2000). *Determining if skewness and kurtosis are significantly non-normal*. Webstat: School of Psychology University of New England.

https://webstat.une.edu.au/unit_materials/c4_descriptive_statistics/determine_skew_kurt.html

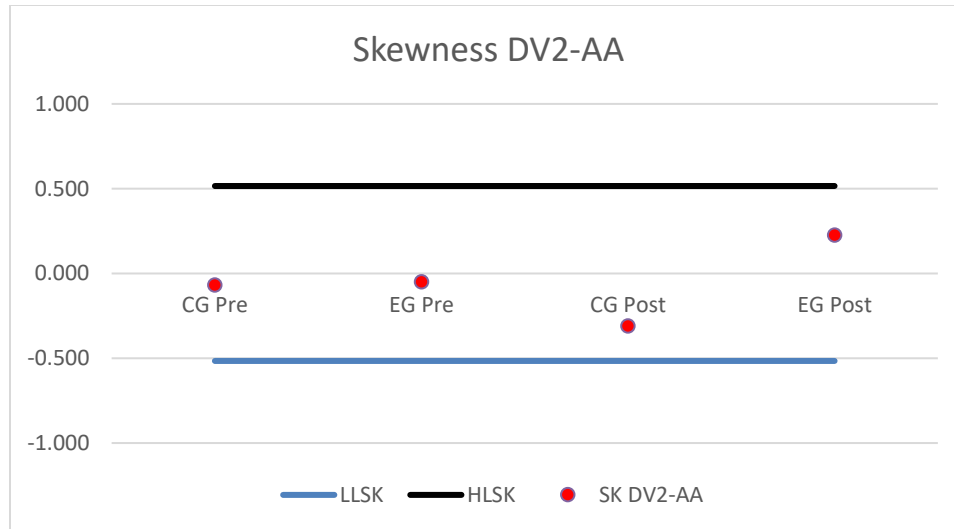


Figure 51: DV2-AA Skewness values for EG and CG in pre- and post-test

The figure illustrates the data of the table. After multiplying the value of the Standard Error of Skewness (SES 0.172) with 3, the observed value is found 0.516. After making this the value boundaries from the negative and positive side (-0.516 to +0.516), the values of Skewness (CG Pre -0.068, EG Pre -0.049, CG Post -0.310, EG Post 0.227) fall in between these boundaries, for the examination of the Academic Anxiety (DV2-AA). This shows that the data is not skewed, and the data can be found normally distributed.

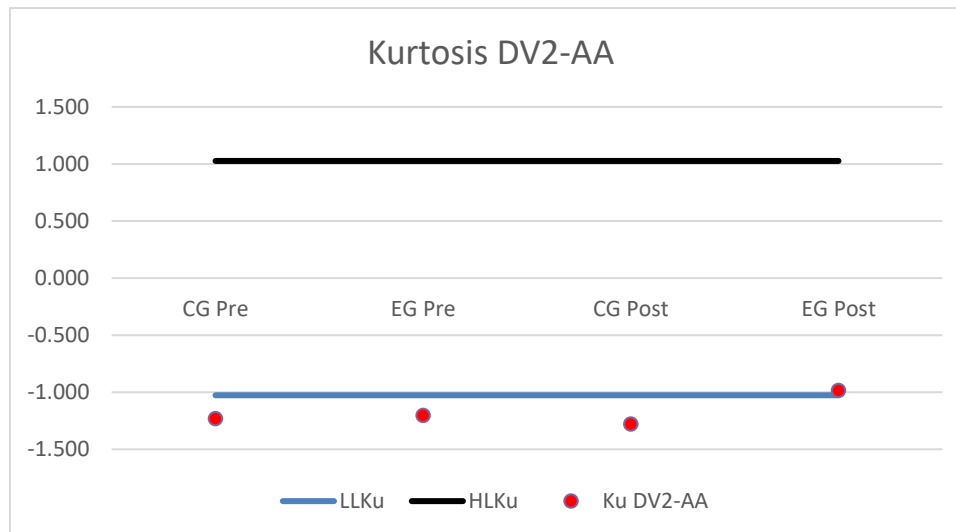


Figure 52: DV2-AA Kurtosis values for EG and CG in pre- and post-test

The figure 52 displays the Kurtosis values for EG and CG in pre- and post-test for DV2-AA.

After multiplying the value of the Standard Error of Kurtosis (0.342) with 3, the observed value is found 1.027. This absolute value sets the upper and lower borders (-1.027 to +1.027).

The values of Kurtosis (CG Pre--1.229, EG Pre-1.203, CG Post -1.276) are below the Lowest Limit (LLKu) except EG Post -0.984, which is within the range, but close to the lower border. All values are below zero, so the distribution is called platykurtic²⁹⁷, meaning broad – the distribution shows thinner tails, meaning less values at the outer borders and more in the middle. This shows that the data could be a bit kurtotic, but the values are not far from the border and therefore normal distribution cannot be falsified by this test.

9.2.1.4 Graphical Analysis (QQ-plot) of normal distribution for the Academic Anxiety (DV2AA)

Quantile-Quantile-plots use the quantiles²⁹⁸ of the real, observed data as well as the quantiles of the expected, normal distribution. The x-axis displays the observed values and the y-axis the expected values. The drawn line consists of the point where the observed value is the same as the expected value. The closer the observed values (dots) are to expected (normally distributed) values – the closer the dots are to the line – the smaller is the difference of the observed distribution and the normal distribution.

²⁹⁷ Datasets with zero excess kurtosis are known as mesokurtic. The most prominent example is the normal distribution. Distributions with positive kurtosis are labelled as leptokurtic, meaning slender, as the tails of the graphs are fatter because of more values at the upper and/ or lower part.

²⁹⁸ Quantiles are threshold values, for example for the 25%-quantile, 25% of the measures are smaller and 75% of the measures show higher values.

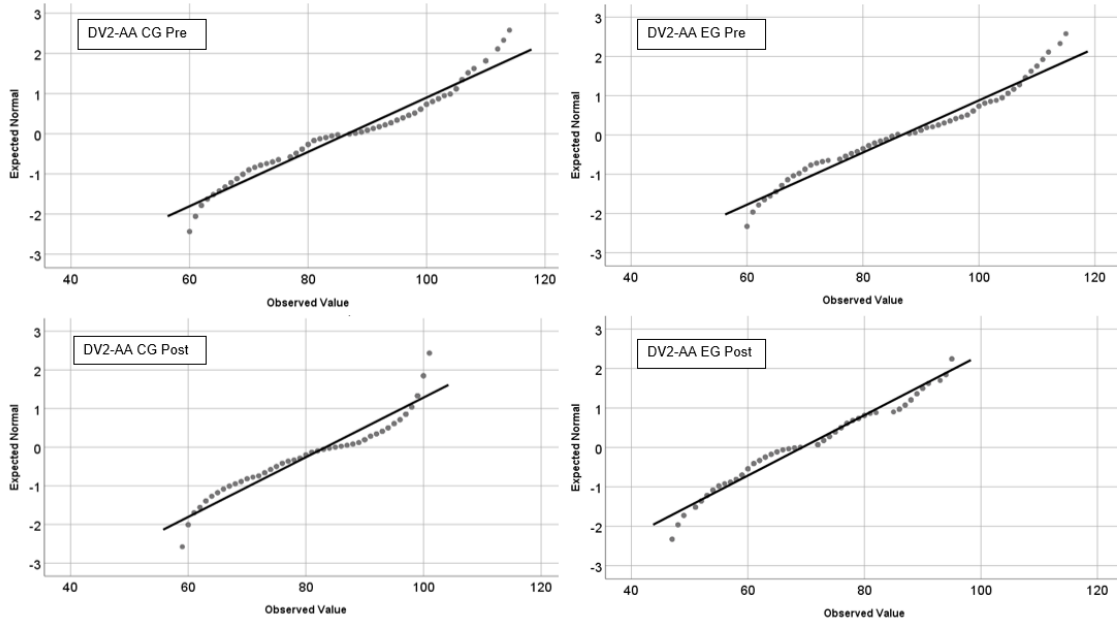


Figure 53: QQ-plots for DV2-AA of CG and EG in the pre- and post-test

The figure 53 shows the graphical representation of the QQ-plots related to the test scores in Academic Anxiety (DV2-AA) to test the normality of the data.

From the post-test data we see that the graphs of CG and EG have moved to the left in the coordinate system, this indicates that the overall test-scores have lowered in the post-test, which would mean that the anxiety level of both groups has fallen at the time of the second measurement. While for the Control Group only the right side moved inwards, meaning the high anxiety level individuals showed a decreased anxiety level while the lower part of the probe remained almost at the same level. For the Experimental Group, the whole group shows a decreased anxiety level, which can be seen by the line and the dots moving completely to the left.

The Graph shows the normality of the pre- and post-test scores of the Control Group (CG) and the Experimental Group (EG) in their Academic Anxiety (DV2-AA).

All the QQ-plots showed at the lower and the upper end dots being a bit more distant from the standard line. This could indicate the existence of some outliers there, but in the box-plot examination of the first subchapter no outliers were found.

All the QQ-plots related to the dependent variable (DV2-AA) did show the dots (representing the observed values) closely distributed around the line (representing the expected values that would occur if the data was normal distributed). From this we can assume normal distribution of the data for the Academic Anxiety Scale.

Hence, from the calculated key values and the graphical analysis of the DV2-AA data a normal distribution of the data for the Academic Anxiety is concluded.

9.2.2 Findings regarding the characteristics of the assumed influence factor pre-test (covariate) – Observation of linearity, homogeneity, and regression lines for the DV2-AA data

The logic assumption made earlier was, that the pre-test result will influence the observed post-test results, in a way that an individual in with a high score value in the pre-test (resembling a high level of positive Attitudes towards the Environment) will also be very likely to show high score values in the post-test.

There should be a linear relationship between the dependent variable (post-test) and the covariate (pre-test), to be able to eliminate that influence when using the ANCOVA method later. To check this, scatter diagrams with regression lines were done and examined.

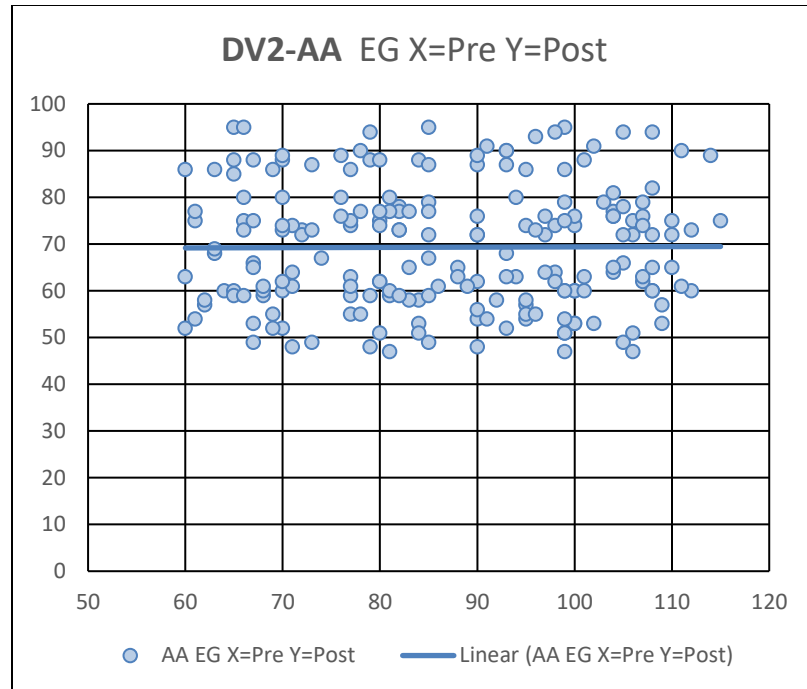


Figure 54: Regression line of pre-post-test values of DV2-AA for EG

In the graph 54 the coordinate of each dot is given by the pre-test result, of a student from the Experimental Group in regard to Academic Anxiety (DV2-AA), on the x-Axis and the post-test results of the same student determine the point's place on the y-axis. The dots (resembling the pre- and post-test results) are here grouped in a cloud. A cloud behavior indicates that there is a correlation between the pre-test result and the post-test result of the same student – the outcome of the pre-test has an influence on the outcome of the post-test.

The linear horizontal regression line indicates that there is no relationship between the pre- and post-test of DV2-AA.

This kind of cloud indicates that students with a lower result in the DV2-AA pre-test achieved a lower result in the post-test, compared to a student who had already higher points in the pre-test and showed even higher points in the post-test. By mathematic procedures, the computer software SPSS calculates a least distance line through the cloud of results. This line (respective the line equation) makes it possible to predict the outcome of a post-test result of a student when we know his/her pre-test results.

In other words, this graph shows the linearity between the dependent and covariate variable, which means the linearity between the post-test and pre-test values of the Academic Anxiety (DV2-AA), for the Experimental Group (EG).

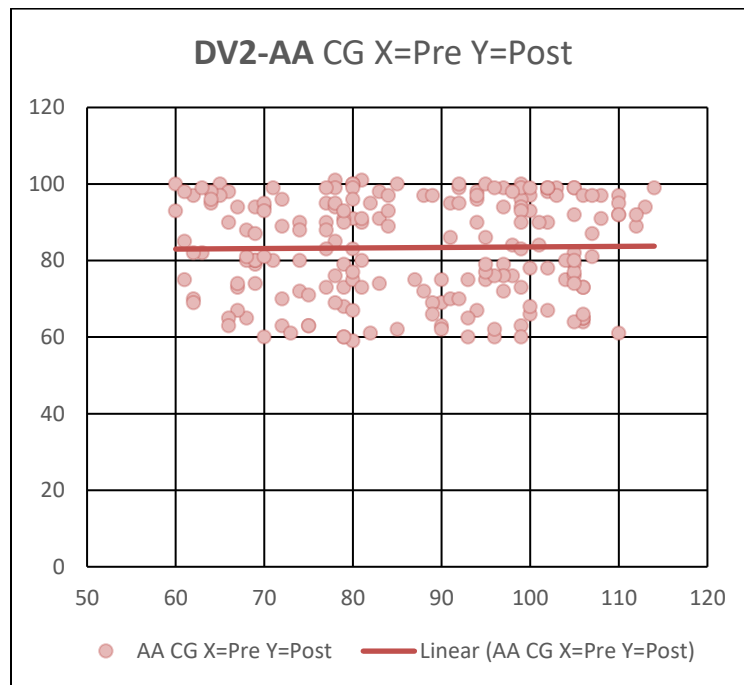


Figure 55: Regression line of pre-post-test values of DV2-AA for CG

This graph 55 shows the linearity between the dependent and covariate variable, which means the linearity between the post-test and pre-test values of the Academic Anxiety (DV2-AA), for the Control Group (CG).

The relationship between the covariate and the dependent variable – between the pre-test result and the post-test results – should be the same in the Experimental (EG) as in the Control Group (CG). If the graphs are having the same slope, the regression lines run nearly parallel, then the assumption of homogeneity of the regression slope is fulfilled.

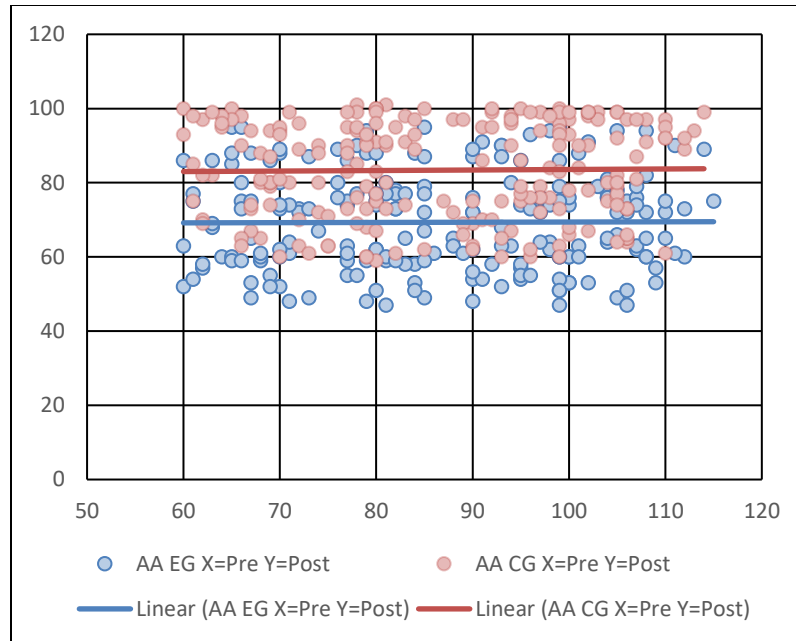


Figure 56: Regression line of pre-post-test values of DV2-AA for EG and CG

This graph 56 shows the combination of the two graphs. The Experimental Group (EG is displayed in the blue color, the Control Group is displayed in the red color. It shows the homogeneity of regression slopes (and therefor the same relative relationship between the pre-test and the post-test measures for the Experimental and the Control Group).

Findings related to the assumption of linearity:

- 1) The first graph shows the linearity between dependent and covariate, means between post and pre-scores in relation to the Experimental Group EG.
- 2) The second graph shows the linearity between dependent and covariate, means between post and pre-scores in relation to the Control Group (CG).

Findings related to the assumption of homogeneity of regression slopes between EG and CG:

The final graph shows the homogeneity of the regression slopes (both previous graphs joined together). The regression lines are almost parallel.

9.2.3 Summary of the assumption tests for ANCOVA of the DV2-AA data

The graphical analysis of the regression lines showed linearity and homogeneity of the pre- and post-test data for the Experimental (EG) and the Control Group (CG).

The measures of the tables in this chapter showed that the data of the Environmental Attitudes Scale is normally distributed in case of the pre-test and post-test scores of the Experimental Group and the Control Group. The tests of Kolmogorov-Smirnov and Shapiro-Wilk did not verify normal distribution. But these two formal tests tend to have lower accuracy in their results, when they are calculated for large samples. Imaging methods were used for further analysis, to examine if there are further indications on non-normality than the two formal tests.

The graphical analysis of the Boxplots, QQ-plots and normal curve, frequency distribution histograms also showed that the data is normally distributed.

Since the required assumptions to apply ANCOVA are fulfilled, the analysis of covariance is applied to find out the effect of meditation on the dependent variable Academic Anxiety (DV2-AA).

9.3 Analysis of the real effect of Sahaja Yoga Meditation on the Academic Anxiety (DV2-AA)

9.3.1 Eliminating side-effects to get the real effect size of the intervention on Environmental Attitudes (DV1-EA) through ANCOVA

The analysis of the covariance (ANCOVA) is a sophisticated statistical method that can compare the outcome of two test groups (EG and CG), by comparing the characteristic

key-measure of the two Means and at the same time controlling the predictable influence of the pre-test-results on the post-test outcomes²⁹⁹. The difference of the Means is calculated by looking at the Variances with the help of F-tests³⁰⁰. The Partial Eta-Square (PESQ) gives the size of the effect. The PESQ value tells how much of the observed effect can be explained through the intervention.

Table 34. Analysis of co-variance (ANCOVA) to compare the adjusted means of EG and CG in Academic Anxiety (DV2-AA)

Source of variation	Sum of Squares (SS)	Degree of freedom (df)	Mean Square (MS)	Value of F	Significance Value (SV) / p-value	Partial Eta-Square (PESQ)
Value of Contrast (between groups)	19741.57	1	19741.57	116.44	0.000	0.227
Value of Error (within groups)	67310.82	397	169.55			

The table 34 reveals the results of the analysis of covariance (ANCOVA), to compare the adjusted means of the Experimental Group (EG) and Control Group (CG).³⁰¹ The measures³⁰² of the table are analyzed in greater detail in the following subchapters.

²⁹⁹ The error variance is reduced by eliminating the influence of distortion variables/ covariances. Here the pre-test is taken as the covariance. The results of the ANCOVA show the significance of the difference of the results between Experimental and Control Group, meaning if the difference is remarkable high enough to be attributed to the intervention or in case of no significance, if a difference between the Means of EG and CG in the post-test could also have appeared just by chance. The ANCOVA also informs in how far this difference is very unlikely to appear by random chance, but in how far it can be completely attributed to the intervention used.

³⁰⁰ F-tests are named after Sir Ronald Fisher. F-tests show the relationship between Variances. Variances are a measure for the dispersion (or scatter) of a sample. They are the counter part of central tendency measures (like Mean, Median). The Variance shows how far stretched or squeezed the probability distribution of a sample is. Variance is the square of the standard deviation.

³⁰¹ This was done to find out "What is the effect of the treatment on the post-test that is not predictable from the pre-test (i.e., conditional on the pre-test)?" (Knapp, 2009, p. 1).

³⁰² The Sum of Squares (SS) is the sum of the squared Standard Deviation (SD). The SS divided through the Degree of freedom (df) gives the Mean square (MS). These measures are calculated (by the software) to perform the technique of partitioning the SS (as a measurement of the spread) into the parts of deviation from the Mean that are caused by the treatments and the parts of deviation that are caused by error influences.

9.3.2 Significance of the effect

The level of significance is an imaginary line that shows, the occurrence of an event is by chance (this means not due to the treatment, not significant) or not by chance (this means due to the treatment, significant). Social Sciences and Management Research fix 95% as their level of significance.

The value of F^{303} (116.44) is found significant, because $p=0.000 < 0.05$. This proves that there exists a significant difference between the Adjusted Means of the Experimental Group (EG) and the Control Group (CG) and a significant effect of Sahaja Yoga Meditation (SYM) on the Academic Anxiety (DV2-AA) was found in this research.

9.3.3 Level of assignability of the found effect to the intervention.

The Partial Eta Square³⁰⁴ is a measure that tells us in the context used in this research, how much of the variation – the difference in the effect sizes – is induced through the dependent variable (Sahaja Yoga Meditation), after eliminating the amount of variation that could be explainable by another variable, the covariate, in our case the pre-test results.

The partial eta-square value (PESQ) found is 0.227. This means 22,7% of the change in Academic Anxiety can be explained through the treatment with meditation.

³⁰³ The F-test gives a ratio value of the variances between the groups and the variances within the group. If the computed p-value is small, then significant relationships exist.

³⁰⁴ The partial eta-square value (PESQ, also known as R^2) “is the ratio of the variance due to the treatment and the total variance. It produces a rough estimate of the of the size of the effect. (...) The value of R^2 will vary between 0.00 and 1.00 depending on the relative size of the treatment effects. It is a measure of the proportions of the total variance that is explained by the treatment effects” (Vincent, 1999, p.165-166).

9.3.4 Size of the effect

The effect size that the intervention had on the dependent variable Academic Anxiety is calculated by taking the difference of the results of the Experimental Group and the results of the Control Group. In our case we take the measures of the Adjusted Means of EG and CG.

Table 35. Adjusted means of Experimental Group and Control Group in Environmental Attitudes (DV1-EA)

Groups	Adjusted Means	Standard Error (SE)	95% Confidence Interval (CI)	
			Lower Bound	Upper Bound
Experimental Group (EG)	69.33	0.92	67.52	71.14
Control Group (CG)	83.38	0.92	81.57	85.19

The table 35 reveals the results of the adjusted means related to the Experimental Group (EG) and Control Group (CG). In case of the Experimental Group, the observed adjusted mean is 69.3 (along with the Standard Error (SE) of 0.92 and Confidence Interval (CI) of 67.52 – 71.14). For the Control Group (CG), the observed adjusted mean is 83.38 (along with the Standard Error (SE) of 0.92 and Confidence Interval (CI) of 81.57 – 85.19).

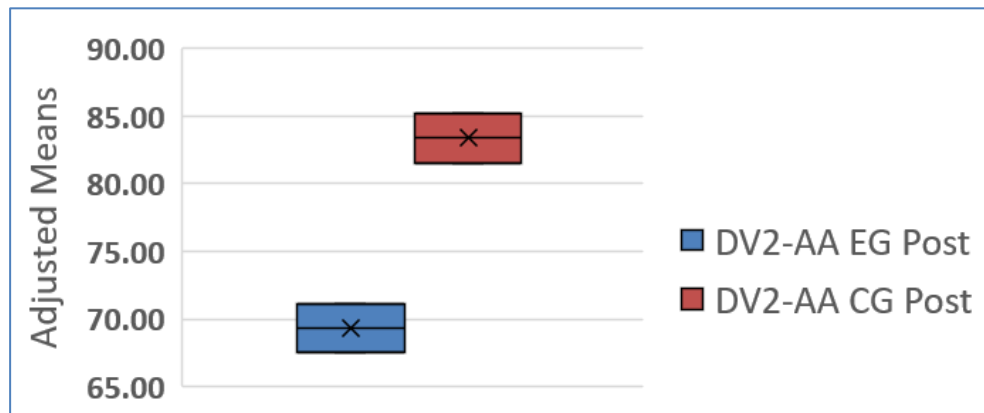


Figure 57: Boxplot of Adjusted Means values and Confidence Intervals (CI) of DV2-AA data for EG and CG

The boxplot (figure 57) visualizes the values of the previous table, namely the Confidence Intervals (CI) and the values of the Adjusted Means for the Experimental Group (EG) and the Control Group (CG) regarding the Academic Anxiety (DV2-AA) of the students.

Since, a significant effect of Sahaja Yoga Meditation (SYM) was found on the results of the Academic Anxiety (DV2-AA), the Adjusted Means are compared to find out the effect. Since the Adjusted Mean of the Experimental Group (69.33) is found smaller than the Adjusted Mean of the Control Group (83.38). A lower anxiety level is considered to be more beneficial than a higher anxiety level. The intervention with Sahaja Yoga Meditation (SYM) is proved to bring a positive change in the Academic Anxiety.

A significant difference between the effect of SYM is found among EG and CG. The difference between the Adjusted Means of the Experimental Group and the Control Group for the Academic Anxiety (DV2-AA) in this research is (-) 14.05.

9.4 Placement of the results into context

9.4.1 Comparing the means with the norm values of DV2-AA

Many tools exist to measure different aspects of anxiety. The Academic Anxiety Scale (DV2-AA) was especially developed and standardized to measure the academic anxiety for the adolescents' population (14-19 yrs.) in India. For the DV2-AA a range of raw scores and a range of z-scores³⁰⁵ were developed.

Table 36. DV2-AA ranges of raw scores for adolescents (14-19 yrs.), class 8-12 standard students

Serial No.	Level of Academic Anxiety	Grade	from score	to score	from %	to %
7	Extremely High	A	102	132	65.9%	100.0%
6	High	B	93	101	55.7%	64.8%
5	Above Average	C	83	92	44.3%	54.5%
4	Average	D	69	82	28.4%	43.2%
3	Below Average	E	59	68	17.0%	27.3%
2	Low	F	49	58	5.7%	15.9%
1	Extremely Low	G	44	48	0.0%	4.5%

³⁰⁵ The range of the z-scores will be between -3 to 3. The scores become unit free by the operation $z = (\text{score} - \text{mean}) / \text{Standard deviation}$.

The table 36 shows the range of raw scores for the Academic Anxiety Scale (DV2-AA) with a labelled level of Academic Anxiety. The levels were determined by the authors of the questionnaire using standardized z-scores.

Table 37. Means of pre- and post- tests for EG and CG and their change value for AA.

Observation	Mean pre-test	Mean post-test	Change of the means
DV2-AA EG	86.74	69.33	-17.41
DV2-AA CG	86.69	83.38	-3.30

The table 37 shows the pre- and post-test values of the means for the Experimental Group (EG) and the Control Group (CG) calculated by SPSS for the Academic Anxiety Scale (DV2-AA). It also shows the difference of post-test minus pre-test, expressing the change of the means.

The pre-test value of the Mean for EG is 86.74 and for CG it is 86.69. The values of the EG and CG correspond to an “above average” level of Academic Anxiety (AA). That category ranges from 83-92, so the pre-test Means are in the lower part of “above average”.

The post-test Mean of the Control Group is 83.38. It is a lower rate of Academic Anxiety, still considered to be at the beginning of the “above average” level, but not far away from an “average” level of Academic Anxiety.

The post-test value of the Experimental Group of 69.33 is situated at the lower boundary of the next lower level of academic anxiety. The range from 69 - 82 represents an “average” level of academic anxiety. Where the “below average” level starts from 68 raw scores.

The change of one and a third level of academic anxiety can be considered as a high impact on the students.

9.4.2 Transforming the Academic Attitudes Scale (DV2-AA) values into a 100% scale to make the impact of the intervention on the three dependent variables comparable and intuitively easier to understand.

The three tests for the dependent variables (DV1-EA, DV2-AA, DV3-AP) have scales of different length each. The scale of DV2-AA ranges from Minimum 44 to Maximum 132 reachable points.

To put the average scores of pre- and post-test (Mean pre-test and Mean post-test) into an easier to interpret and understand format, the researcher transformed them into percentage values (%Mean pre-test and %Mean post-test). This is done as a normative process. The difference between the %Mean post-test value and the %Mean pre-test value can be seen in the “Change in percent points” column.

Table 38. pre- and post-test values of Change in percent points, of Means, % Means with the values for Minimum / Maximum score for the observation of DV2-AA, in both groups (Experimental and Control Group).

Observation	Mean (pre-test)	Mean (post-test)	Min Score	Max Score	% Mean (pre-test)	% Mean (post-test)	Change in percent points
DV2-AA EG	86.74	69.33	44	132	48,56%	28,78%	-19,78
DV2-AA CG	86.69	83.38	44	132	48,51%	44,75%	-3,76

The table 38 shows the pre-and post-test means of the observations for variable DV2-AA, in both of the groups (Experimental and Control Group). Along with the minimum score and the maximum score of each test, according to the normative values, the percentage values of the means are calculated and shown ($\% \text{ Mean} = (\text{Mean Score} - \text{Min. Score}) / (\text{Max. Score} - \text{Min. Score})$). The last column shows the change between % Mean post-test minus % Mean pre-test in percentage points. The key values of the table are displayed in the following graph.

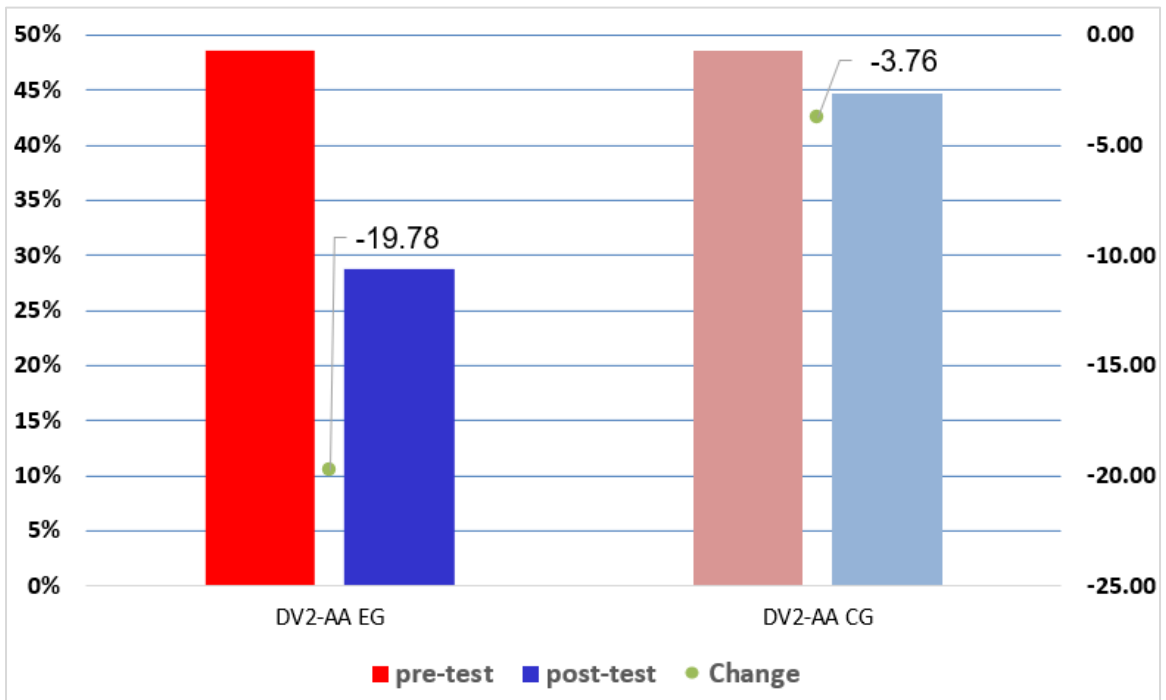


Figure 58: Normed Mean in % - Pre-Post Delta - EG & CG for DV2-AA

In the figure 58 the left y-axis, the primary axis, displays the percentage values of %Mean reached by EG and CG in the test on the dependent variable DV2-AA. The red bar graphs represent the pre-tests, the blue bars the post-tests. The bars with bright color represent the EG, the washed out red and blue color represents the CG.

On the right y-axis, the secondary axis, the values of the change are displayed the values are represented by a green dot in the graph. In addition, the exact value of gain or loss from pre- to post-test in percentage points is given as a number in the data label above the bars belonging together.

The figure (and the table) shows that the Experimental Group (DV2-AA EG) came from a pre-test “above average” anxiety level (48.56 %), lowered by 19.78 percentage points to an “average” level (28,78 %) after the intervention.

The Control Group (DV2-AA CG) shows a pre-test lowering of the original anxiety level (“above average”) by 3.76 percentage points (from 48.51% to 44.75%). The effect shown by the CG is ca. 20% of the effect shown by the EG.

Summary and conclusions from the findings of the analysis of DV2-AA

The descriptive statistics for DV2-AA showed a change of the Mean of the Experimental Group in the post-test. Through various statistical and graphical analysis methods the data was found to be normal distributed. This means the findings of the analysis can be generalized to the whole population (of 9th graders in government schools in Andhra Pradesh³⁰⁶).

The findings of this chapter are:

- 1) Sahaja Yoga Meditation (SYM) is found to be effective in bringing a positive change regarding the Academic Anxiety.
- 2) In this research the Mean of the Academic Anxiety of the Experimental Group lowered by ca. 20% (from “above average” to “average” / nearly “below average”) after the intervention with half a year regular Sahaja Yoga Meditation practice.
- 3) The Partial Eta-Square value (PESQ) of 0.227 justifies statistically the formulation that 22.7% of the changes in the Academic Anxiety is explained by SYM.
- 4) The results of this research are significant and can be generalized on larger parts of the population.

³⁰⁶According to 2020 census, Andhra Pradesh has now about 52.5 million inhabitants. In 2014 there was the separation of the Telanga state (38.4 million), that still has a similar school system and the same mother tongue Telugu. Together these states have a population of 90.9 million residents, which is more than the population of Germany (83.02 million-2019) or France (67.06 million-2019).

10 DV3-AP: Analysis of the study related to effect of meditation on Dependent Variable 3 - Academic Performance

The analytical procedures used in this chapter and their backgrounds have been described in a detailed way in chapter 6. To reduce the level of repetition that is unavoidable when analyzing three dependent variables with the same statistical instruments, the explanations of the procedures have been shortened in this chapter, partially they have been put into the footnotes.

The Dependent Variable 3 Academic Performance was measured by the academic results³⁰⁷ of the students. To assess the learning outcomes, the researcher collected the academic results of the selected students from their half-yearly and yearly/annually examinations conducted in their respective schools before and after the intervention. In particular, in the beginning of the research in June 2018 as a pre-data and after six months of the intervention in January 2019 as a post-data from both experimental and control group students.

³⁰⁷ Academic results are percentage of total marks obtained by the students in different subjects achieved in their school examinations. There are 6 subjects in total, namely Mathematics, General Science (Physical Science and Natural science), Social Studies (Geography, History, Civics & Economics) and three languages -Telugu (Mother Tongue), Hindi (National Language of India) and English.

10.1 Describing the sample with key figures - Descriptive statistics of the DV2-AA dataset

The basic idea of descriptive statistics is to condense the large amount of data into key values. The data of the DV2-AA measurement was put in the SPSS 25 software. For the observations of the Experimental and Control Group in the pre- and post-test the following statistic key values were the results found to describe the data sets.

Table 39. Descriptive statistical analysis of the pre-test and post-test results of the Academic Performance (DV3-AP) of the Experimental Group (EG) and the Control Group (CG)

Observation	DV3-AP CG Pre	DV3-AP EG Pre	DV3-AP CG Post	DV3-AP EG Post
Measure	Value	Value	Value	Value
Mean	70.55	70.55	70.94	74.63
Standard Error of Mean (SEM)	1.01	1.05	0.95	0.96
Median	71.00	70.00	71.00	75.00
Variance	202.83	219.49	182.20	183.49
Standard-Deviation (SD)	14.24	14.82	13.50	13.55
Minimum value	42.00	42.00	43.00	43.00
Maximum value	99.00	99.00	98.00	99.00
Range (R)	57.00	57.00	55.00	56.00
Skewness (SK)	0.09	0.04	0.06	-0.06
Std. Error of Skewness (SES)	0.17	0.17	0.17	0.17
Kurtosis (Ku)	-0.72	-0.75	-0.70	-0.79
Std. Error of Kurtosis (SEK)	0.34	0.34	0.34	0.34

The table 39 and shows the descriptive statistics related to the scores of the Academic Performance (DV3-AP) for the Experimental Group (EG) and Control Group (CG) for the two observations (pre-test and post-test).

The Mean³⁰⁸ value (“average score”) of the pre-tests of the CG (70.55) and the EG (70.55) are very close together. The Mean of the post test is slightly higher for the Control Group

³⁰⁸ Mean is also called the expected value, which can be misleading. For example, the average income of a population can be much higher than the income that most of the people actually have,

(70.94) and remarkably lower for the Experimental Group (74.63). The Median³⁰⁹ scores show the same tendency. They are the close together for CG (71.00) and EG (70.00) in the pre-test, with the again the same value in the post-test for the CG (71.00) as in the pre-test. The Median of the post-test of the Experimental Group (75.00) is higher than the pre-test of EG, like the Mean.

The Mean and the Median do not differ very much. This can already be seen as an indicator of no or only small skewness.³¹⁰ Even if the Means of different data sets may be nearly of the same value, data sets can be scattered differently³¹¹. They could show a slight or a strong diversity of the data points. The Standard Deviation (SD) of the pre-test observations of CG Pre (14.24) and EG Pre (14.82) show only small differences, the same do the post-test observations on only a very little, smaller level (CG Post 13.50, EG Post 13.55).

These key measures taken together indicate an effect on the Experimental Group through the intervention.

if there are some individuals with a very large income – that will distort the value towards the higher end (skewness).

³⁰⁹ The Median is the “middle value”. When all test results are ordered in an ascending order, the median is the score value of the observation standing at the middle position, e.g., the score value of the observation at the 50th place in the ascending order, in a sample of 100 observations. Sometimes the Median gives a better feeling what most of the “typical” observations are. Let’s take the income distribution as an example. In a sample with a small number of individuals some extremely high incomes values can push the average score value, the Mean, up. The Median will be closer to the earnings of most of the people than the Mean in this example.

³¹⁰ The Skewness as well as Kurtosis will be examined more closely in the following subchapter.

³¹¹ The Range (R) gives the span width of the values, it is calculated by the subtraction of the Minimum value from the Maximum value. The Range alone could be misleading, for example these values could come from extreme outliers. Other key values that contain all score values and describe the diversity of the data set are the Standard Error of the Mean, the Variance and the Standard Deviation.

The Variance is calculated by the squared distances to the mean from each score, added up and divided by the quantity of the score values. The squaring involved make the Variance value difficult for intuitive understanding but brings some mathematical advantages.

The Standard Deviation (SD) solves the problem of intuitive understanding. It is the square root of the Variance. If the Standard Deviation (SD) is added and subtracted from the Mean value, these score values span a section around the Mean, where most of the observed values can be found. If the Data is normally distributed around 2/3 of the observed values are in this segment.

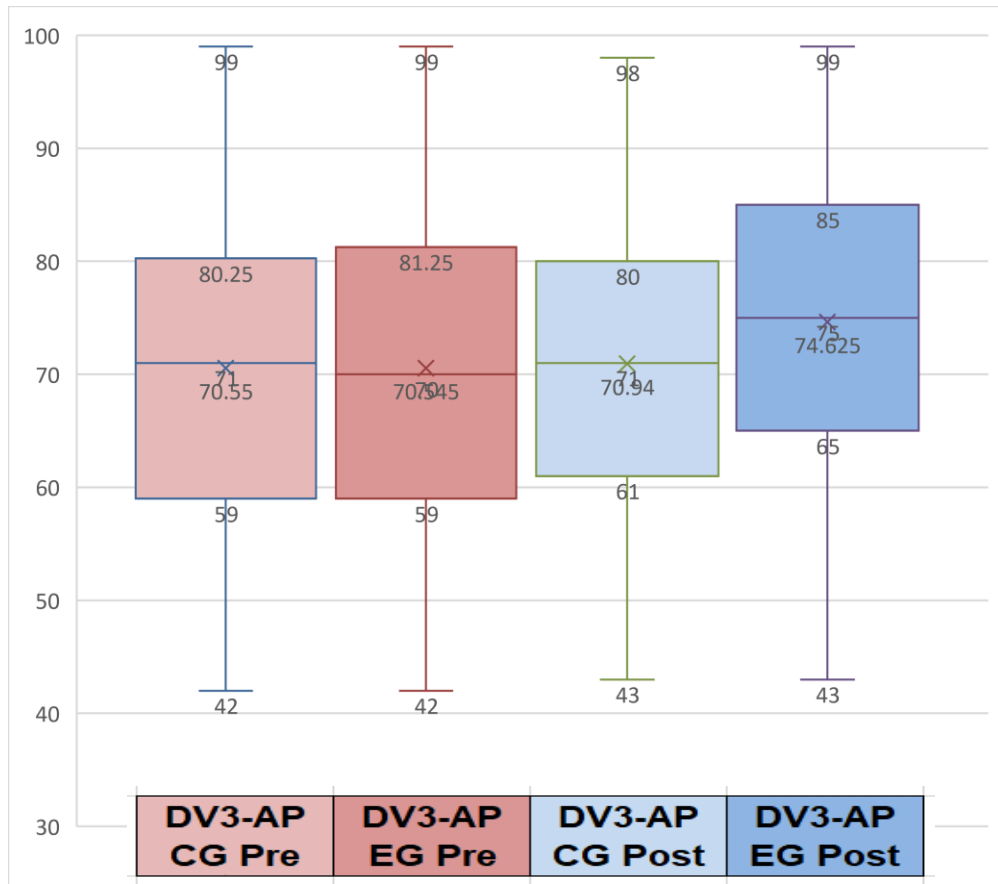


Figure 59: Boxplot diagram for the descriptive statistics of Academic Performance (DV3-AP)

The figure 59 shows the boxplot diagram of the descriptive statistics related to the scores of the Academic Performance (DV3-AP) for the Experimental Group (EG) and Control Group (CG) for the two observations (pre-test and post-test). The diagram was done with Excel, therefore the values differ slightly from the table calculated by SPSS³¹².

The boxplot³¹³ underlines the educated guess mentioned earlier, that the intervention with Sahaja Yoga Meditation showed an effect on the Experimental Group. The boxplots of the

³¹² SPSS is considered to deliver the better mathematical results, while Excel is better with the diagrams.

³¹³ The Mean is given by the "X" sign. The Median is given by the horizontal line within the box. The size of the boxes is determined through the 1st quartile (Q₁ or 25th percentile) as the lower border and the 3rd quartile (Q₃ or 75 percentile) as the upper border. These quartiles are the medians of the lower and the upper half of the dataset are also used to define outliers. The boxplot diagram

pre-test observations of CG and EG and the post-test of CG seem to be quite similar, while the post-test data from the Experimental Group (EG) seems to be slightly different. The box plots show no indication to falsify normal distribution and no outliers are shown.

In the following subchapters it will be examined, if the data of our sample can be found normally distributed, as this would indicate that our sample can be seen representative for the population (meaning all 9th graders in government schools in Andhra Pradesh) and the research results then could be generalized. Also, this set of examinations is necessary to test the assumptions of the Analysis of the Covariance. By the ANCOVA we want to find out, in more detail and accuracy, the effect of the meditation intervention and if the shown effect can be considered significant. The magnitude of the shown effect will be discussed and classified.

10.2 Pre-Analysis: Testing Assumptions of the DV3-AP data for the applicability of appropriate statistical tests

10.2.1 Testing Normality of the DV3-AP data

The tested samples of EG and CG should represent the population (or at least that part of the population that we are aiming to cover with our research). The large population³¹⁴ is per se normally distributed, hence our sample should also be normally distributing.

The findings related to the assumption of normality, for the use of ANCOVA on the Academic Performance (DV3-AP) are:

shows no outliers, therefore the “antennas” (whisker) give the Minimum and Maximum value of each observation.

³¹⁴ In our case we are not aiming to make predictions about the influence of meditation in whole of India or in the whole world. The focus of the research is on children from government schools in class 9 in Andhra Pradesh. So, it is “enough”, if our sample is representative for children from government schools in the 9th grade in Andhra Pradesh.

10.2.1.1 Kolmogorov-Smirnov and Shapiro-Wilk-Test

The Null-Hypothesis of the Kolmogorov-Smirnov-Test and the Shapiro-Wilk-Test is that the data is normal distributed. If the significance is higher than $p=0,05$, than the hypothesis, that the data is normal distributed, can be accepted.

Table 40. Kolmogorov-Smirnov-and Shapiro-Wilk-Test for Academic Performance (DV3-AP)

Test / Group / Observation	Kolmogorov-Smirnov-Test			Shapiro-Wilk-Test		
	Statistic	df	Significance	Statistic	df	Significance
DV3-AP CG Pre	0.056	200	.200*	0.978	200	0.003
DV3-AP EG Pre	0.047	200	.200*	0.977	200	0.002
DV3-AP CG Post	0.056	200	.200*	0.981	200	0.010
DV3-AP EG Post	0.048	200	.200*	0.978	200	0.004

The Table 40 shows the SPSS 25 results of the Kolmogorov-Smirnov- and Shapiro-Wilk-Test for Learning Outcomes of the students. The Null-Hypothesis of both tests is that the data is normal distributed. If the significance is higher than $p=0.05$, than the hypothesis that the data is normal distributed can be accepted.

The Kolmogorov-Smirnov-Significance is higher than 0.05 for all scales. From this test we can conclude normal distribution for all observations.

The Shapiro-Wilk-Test does not show a significance higher than 0.05 for any observations of the Academic Performance (DV3-AP). From this test we cannot conclude a normal distribution for all tested observations. But we also do not have to falsify normal distribution³¹⁵. Therefore it is advisable to have an additional graphical analysis on normal distribution with larger samples, if the Kolmogorov-Smirnov- or the Shapiro-Wilk-tests reject the null-hypothesis of normal distribution (Field, 2009, p.143).

³¹⁵ The Kolmogorov-Smirnov- and Shapiro-Wilk-Test work well as analytical tests, if the samples are small or medium sized. But when the samples are larger (e.g., 70-100 or more) even minimal deviations from a normal distribution can lead to a rejection of the normal distribution according to the test-results.

10.2.1.2 Histograms and bell-shaped normal distribution curve

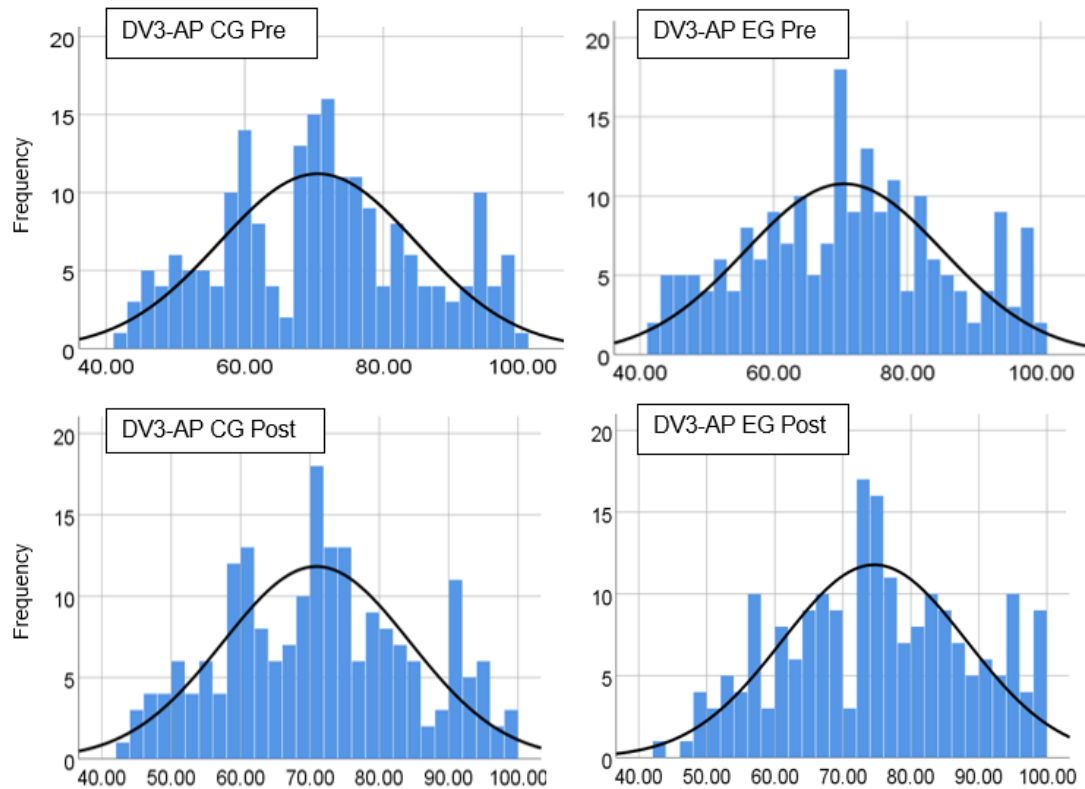


Figure 60: Histogram of the frequency distribution of pre- and post-test scores with normal distribution curve for EG and CG for Academic Performance (DV3-AP)

The figures from SPSS25 show a normal curve distribution (bell-shaped curve) projected over the frequency of the pre- and post-test values of the Academic Performance (DV3-AP) of the students from the Experimental Group and the Control Group. The bars in the graphs are higher the more students are counted with that value. The test values of the Academic Performance (the academic results) are found on the horizontal-axis, while on the vertical-axis the frequency of the occurrence of the specific value is displayed.

The shape of the distributions seems to come close to the bell-shaped form of the normal distribution. This indicates that the pre- and post-test values of the Experimental Group and the Control Group are normally distributed regarding the academic reports of the students.

10.2.1.3 Skewness and Kurtosis

Skewness and Kurtosis are statistical key figures that describe whether the test-data is normally distributed. They throw light on the graphs and examine whether a drawn graph is similar or differs from a graph of the normal distribution (the Gaussian bell curve). Skewness measures the symmetricity of the distribution curve³¹⁶. Kurtosis measures the flatness of the normal distribution curve³¹⁷.

Table 41. Descriptive statistical analysis related to the test scores of Experimental Group (EG) and Control Group (CG) for Academic Performance (DV3-AP)

Ob- servation	Mean	Standard- Deviation (SD)	Minimum value	Maximum value	Range (R)	Skewness (SK)	Kurtosis (Ku)	Std. Error of Means (SEM)
DV3-AP CG Pre	70.55	14.24	42.00	99.00	57.00	0.088	-0.722	1.007
DV3-AP EG Pre	70.55	14.82	42.00	99.00	57.00	0.042	-0.749	1.007
DV3-AP CG Post	70.94	13.50	43.00	98.00	55.00	0.063	-0.700	1.007
DV3-AP EG Post	74.63	13.55	43.00	99.00	56.00	-0.057	-0.786	1.007

Table 41 shows the descriptive statistical analysis related to the test scores of Experimental Group (EG) and Control Group (CG) for Academic Performance (DV3-AP).

One method of analyzing Skewness and Kurtosis is to see if the absolute value of Skewness and Kurtosis is below 1. Then the data is not skewed nor has a Kurtosis. This is the case with the Academic Performance (DV3-AP) data for both groups and observations (pre- and post-test) for the Skewness and Kurtosis. From this indicator we can conclude that the data of DV3-AP is not neither skewed nor kurtotic.

³¹⁶ Skewness: The scores of the observation should be rather equal distributed above, as below, the Mean. For the normality of the data, the tail of the normal curve should not be elongated, either towards the positive side or negative side (of the x-axis). Unskewed datasets shows the most frequent scores in the middle. Skewed datasets display the most frequent scores (with the highest bar) on either one side of the graph.

³¹⁷ Kurtosis: The curve should not be peaked compared to the normal distribution or flatter than normal, so approx. optimal flatness is required.

Another method involves the Standard Errors of the Skewness (SES) and the Kurtosis (SEK).

Table 42. Skewness and Kurtosis, their Standard Error and Boundaries for DV3-AP

Ob- serva- tion	Std. Error of Skew- ness (SES)	Lowest Limit (LLSK)	Skewn- ess (SK)	Higes- t Limit (HLSK)		Std. Error of Kurtosi- s (SEK)	Lowest Limit (LLKu)	Kurtosi- s (Ku)	Highest Limit (HLKu)
DV3-AP CG Pre	0.172	-0.516	0.088	0.516		0.342	-1.027	-0.722	1.027
DV3-AP EG Pre	0.172	-0.516	0.042	0.516		0.342	-1.027	-0.749	1.027
DV3-AP CG Post	0.172	-0.516	0.063	0.516		0.342	-1.027	-0.700	1.027
DV3-AP EG Post	0.172	-0.516	-0.057	0.516		0.342	-1.027	-0.786	1.027

The Table 42 shows the Standard Error of Skewness (SES) for the two groups (EG, CG) and observation times (pre-test, post-test). Out of this value (SES) the upper and lower boundaries are formed by multiplying the value one time with +1 for one boundary and with -1 for the other boundary, than the term is multiplied with 3. The value of Skewness (SK) should lay in between these boundaries. The same procedure is applied on the Standard Error of Kurtosis (SEK) and the Kurtosis (Ku).

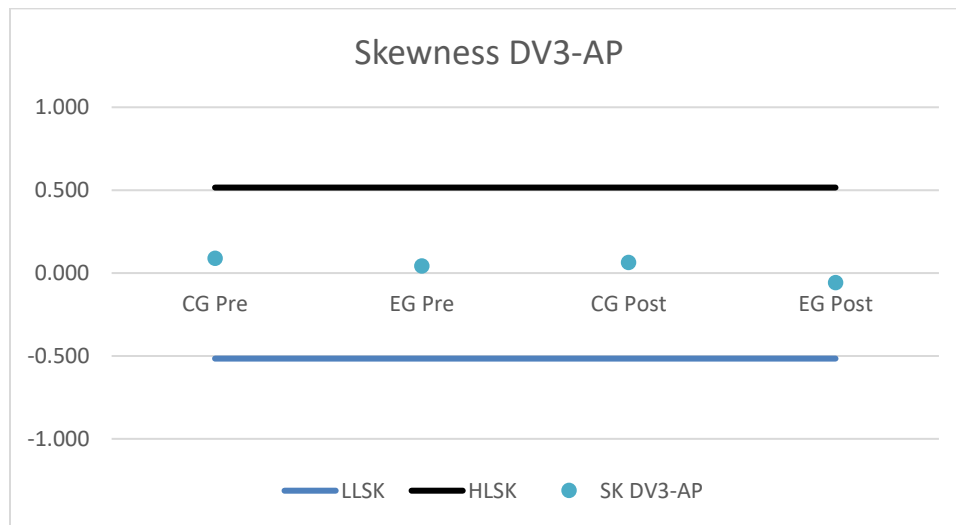


Figure 61: DV3-AP Skewness values for EG and CG in pre- and post-test

The figure 61 illustrates the data of the table. After multiplying the value of the Standard Error of Skewness (SES 0.172) with 3, the observed value is found 0.516. After making this the value boundaries from the negative and positive side (-0.516 to +0.516), the values of Skewness (CG Pre 0.088 EG Pre 0.042, CG Post 0.063, EG Post -0.057) fall in between these boundaries, for the examination of the Academic Performance (DV3-AP). This shows that the data is not skewed, and the data can be found normally distributed.

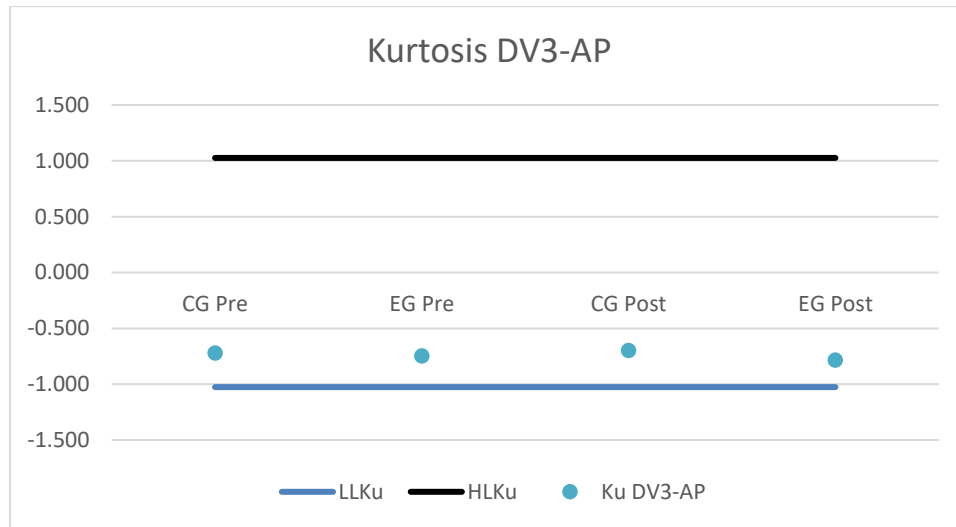


Figure 62: DV3-AP Kurtosis values for EG and CG in pre- and post-test

The figure 62 displays the Kurtosis values for EG and CG in pre- and post-test for DV3-AP.

After multiplying the value of the Standard Error of Kurtosis (0.342) with 3, the observed value is found 1.027. This absolute value sets the upper and lower borders (-1.027 to +1.027).

The values of Kurtosis (CG Pre -0.722, EG Pre -0.749, CG Post -0.700, EG Post -0.786) are all within the range. All values are below zero, so the distribution is called platykurtic³¹⁸, meaning broad – the distribution shows thinner tails, meaning less values at the outer borders and more in the middle. This shows that the data could be a bit kurtotic, but the

³¹⁸ Datasets with zero excess kurtosis are known as mesokurtic. The most prominent example is the normal distribution. Distributions with positive kurtosis are labelled as leptokurtic, meaning slender, as the tails of the graphs are fatter because of more values at the upper and/ or lower part.

values are not far from the border and therefore normal distribution cannot be falsified by this test.

10.2.1.4 Graphical Analysis (QQ-plot) of normal distribution for the Academic Anxiety (DV2AA)

Quantile-Quantile-plots use the quantiles³¹⁹ of the real, observed data as well as the quantiles of the expected, normal distribution. The x-axis displays the observed values and the y-axis the expected values. The drawn line consists of the point where the observed value is the same as the expected value. The closer the observed values (dots) are to expected (normally distributed) values – the closer the dots are to the line – the smaller is the difference of the observed distribution and the normal distribution.

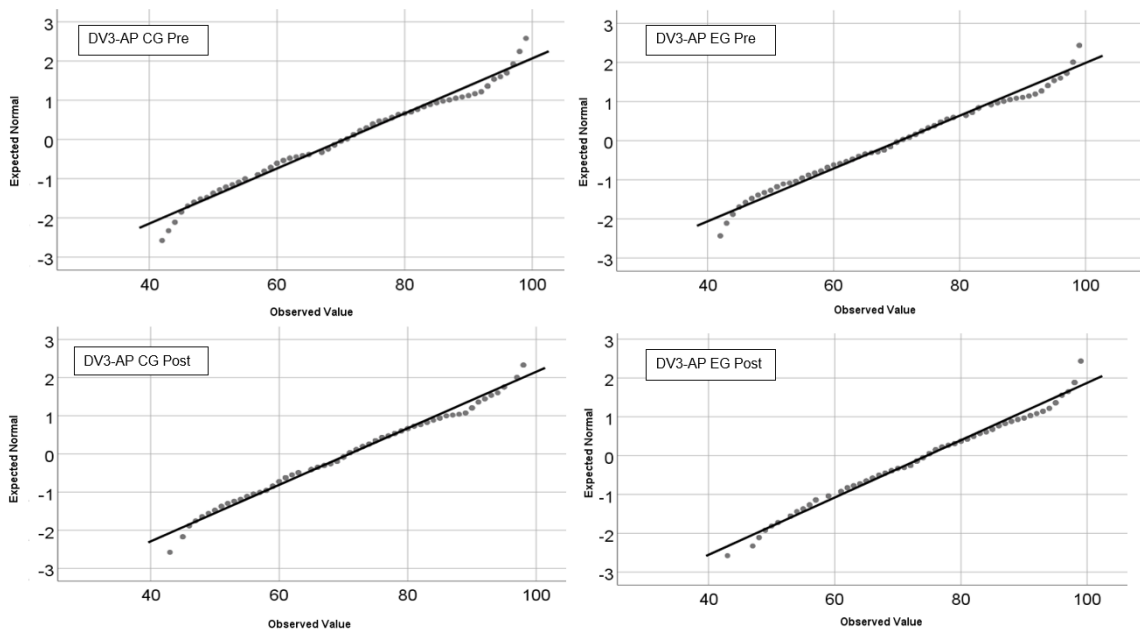


Figure 63: QQ-plots for DV3-AP of CG and EG in the pre- and post-test

The figure 63 shows the graphical representation of the QQ-plots related to the test scores in Academic Performance (DV3-AP) to test the normality of the data. The graphs of the different observations for DV3-AP show very little differences.

³¹⁹ Quantiles are threshold values, for example for the 25%-quantile, 25% of the measures are smaller and 75% of the measures show higher values.

The graphs show the normality of the pre- and post-test scores of the Control Group (CG) and the Experimental Group (EG) in their Academic Performance (DV3-AP).

All the QQ-plots showed at the lower and the upper end dots being a bit more distant from the standard line. This could indicate the existence of some outliers there, but in the box-plot examination of the first subchapter no outliers were found.

All the QQ-plots related to the dependent variable (DV3-AP) did show the dots (representing the observed values) closely distributed around the line (representing the expected values that would occur if the data was normal distributed). From this we can assume normal distribution of the data for the Academic Performance.

From the calculated key values and the graphical analysis of the DV3-AP data a normal distribution of the data for the Academic Performance is concluded.

10.2.2 Findings regarding the characteristics of the assumed influence factor pre-test (covariate) – Observation of linearity, homogeneity and regression lines for the DV2-AA data

There should be a linear relationship between the dependent variable (post-test) and the covariate (pre-test), to be able to eliminate that influence when using the ANCOVA method later. To check this, scatter diagrams with regression lines were done and examined.³²⁰

³²⁰ The logic assumption made earlier was, that the pre-test result will influence the observed post-test results, in a way that an individual in with a high score value in the pre-test (resembling a high level of positive Attitudes towards the Environment) will also be very likely to show high score values in the post-test.

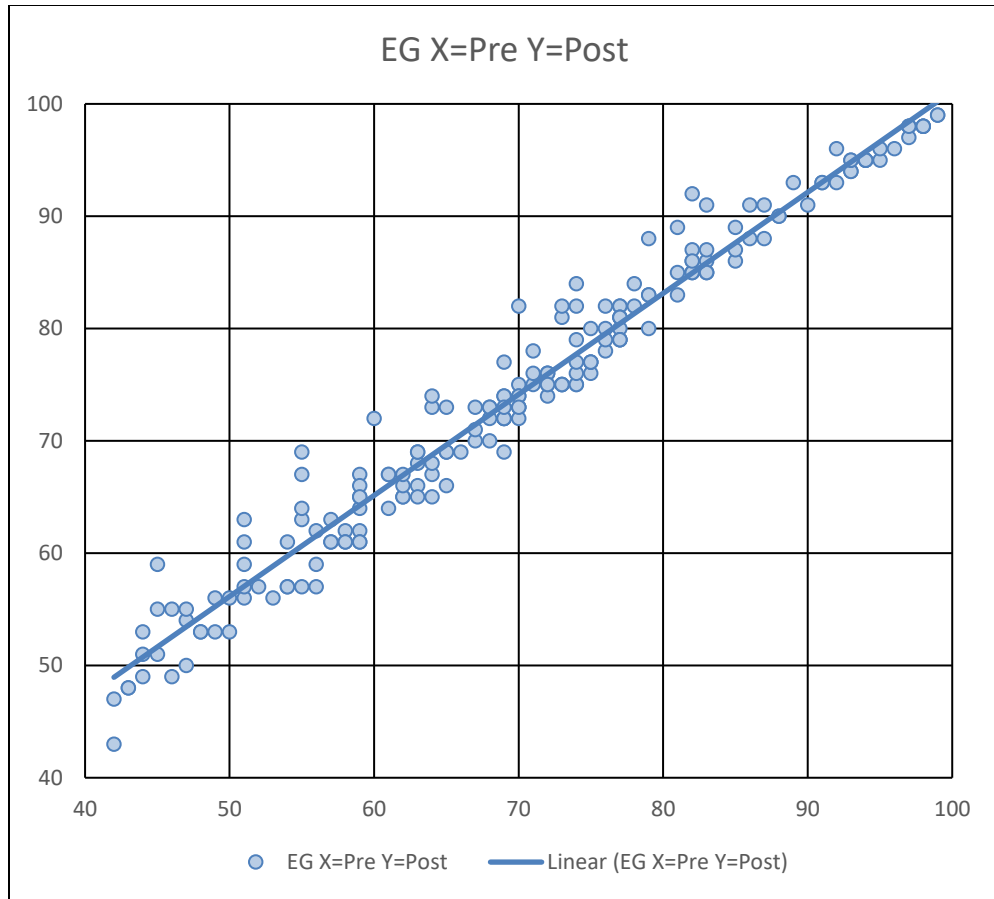


Figure 64: Regression line of pre-post-test values of DV3-AP for EG

In the graph 64, the coordinate of each dot is given by the pre-test result, of a student from the Experimental Group in regard to Academic Performance (DV3-AP), on the x-Axis and the post-test results of the same student determine the point's place on the y-axis. The dots (resembling the pre- and post-test results) are here grouped in a cloud. A cloud behavior indicates that there is a correlation between the pre-test result and the post-test result of the same student – the outcome of the pre-test has an influence on the outcome of the post-test.

This kind of cloud indicates that students with a lower result in the DV3-AP pre-test achieved a lower result in the post-test, compared to a student who had already higher points in the pre-test and showed even higher points in the post-test. By mathematic procedures, the computer software SPSS calculates a least distance line through the

cloud of results. This line (respective the line equation) makes it possible to predict the outcome of a post-test result of a student when we know his/her pre-test results.

In other words, this graph shows the linearity between the dependent and covariate variable, which means the linearity between the post-test and pre-test values of the Academic Performance (DV3-AP), for the Experimental Group (EG).

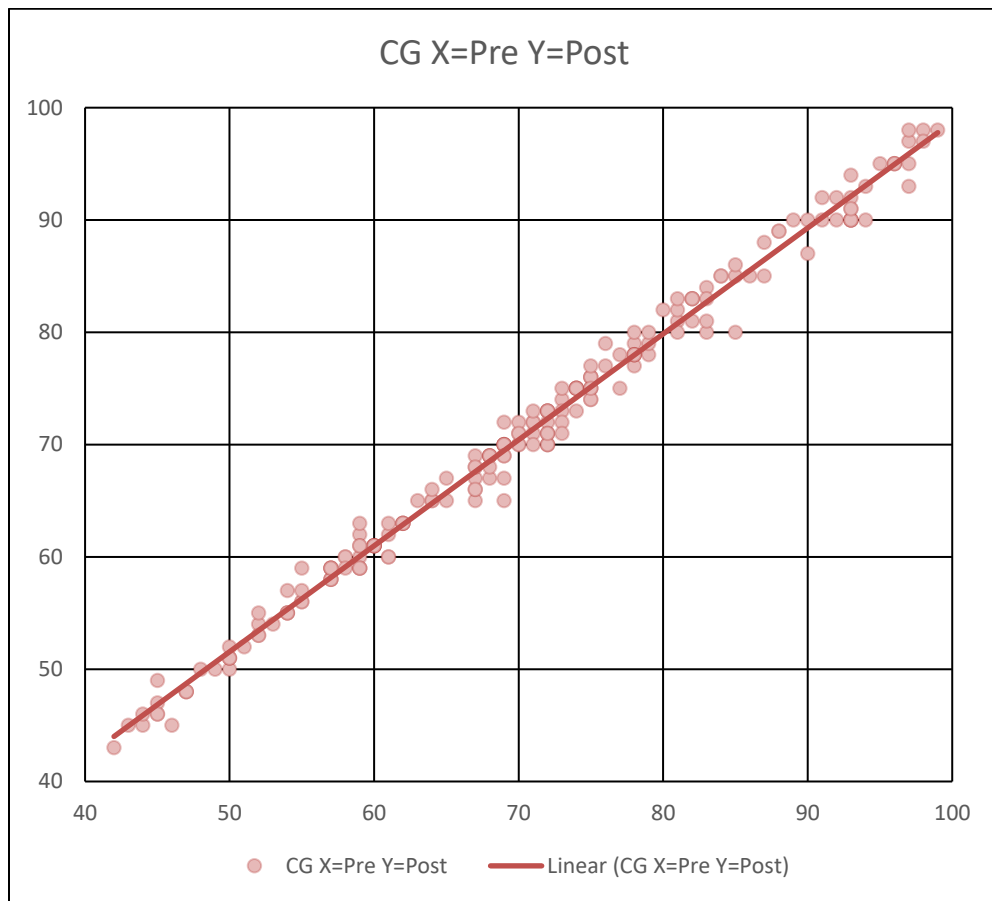


Figure 65: Regression line of pre-post-test values of DV3-AP for CG

This graph 65 shows the linearity between the dependent and covariate variable, which means the linearity between the post-test and pre-test values of the Academic Performance (DV3-AP), for the Control Group (CG).

The relationship between the covariate and the dependent variable – between the pre-test result and the post-test results – should be the same in the Experimental (EG) as in the Control Group (CG). If the graphs are having the same slope, the regression lines run nearly parallel, then the assumption of homogeneity of the regression slope is fulfilled.

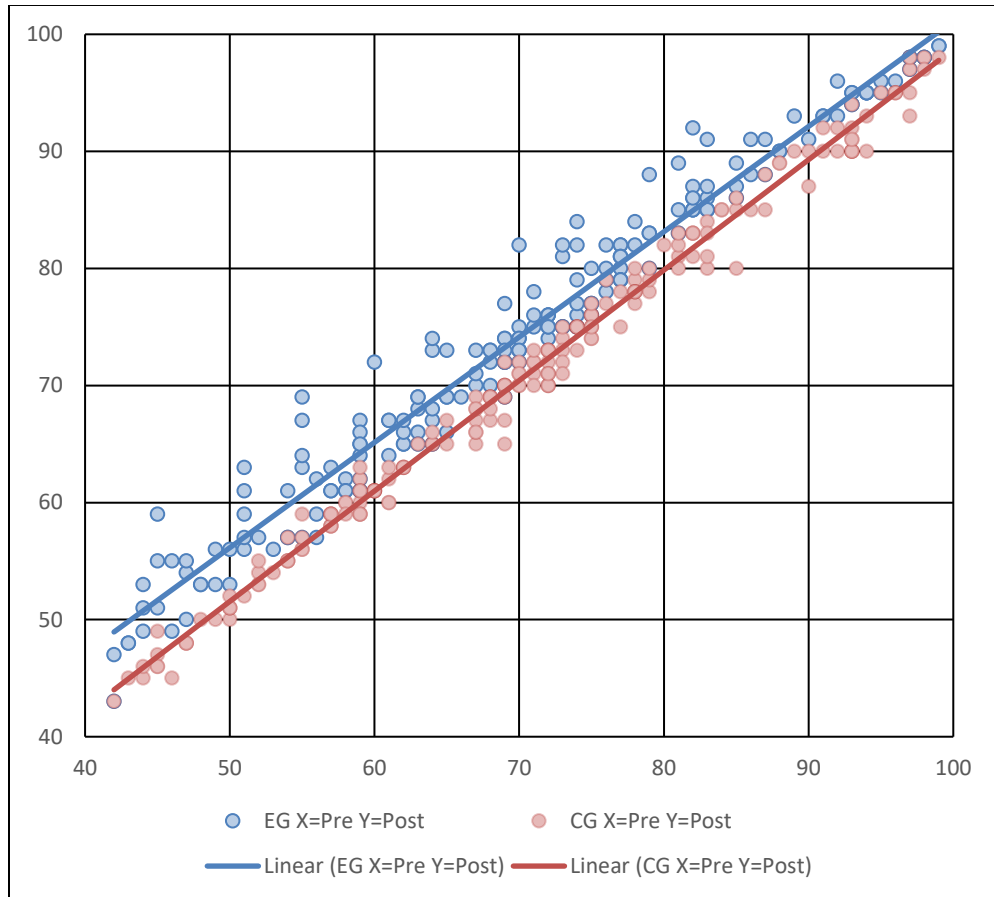


Figure 66: Regression line of pre-post-test values of DV3-AP for EG and CG

This graph 66 shows the combination of the two graphs. The Experimental Group (EG is displayed in the blue color, the Control Group is displayed in the red color. It shows the homogeneity of regression slopes (and therefore, the same relative relationship between the pre-test and the post-test measures for the Experimental and the Control Group).

Findings related to the assumption of linearity:

- 1) The first graph shows the linearity between dependent and covariate, means between post and pre-scores in relation to the Experimental Group (EG).
- 2) The second graph shows the linearity between dependent and covariate, means between post and pre-scores in relation to the Control Group (CG).

Findings related to the assumption of homogeneity of regression slopes between EG and CG:

The final graph (both previous graphs joined together) shows the homogeneity of the regression slopes. The regression lines are almost parallel.

10.2.3 Summary of the assumption tests for ANCOVA of the DV3-AP data

The graphical analysis of the regression lines showed linearity and homogeneity of the pre- and post-test data for the Experimental (EG) and the Control Group (CG).

The measures of the tables in this chapter showed that the data of the Academic Performance is normally distributed in case of the pre-test and post-test scores of the Experimental Group and the Control Group. The test of Shapiro-Wilk did not verify normal distribution. But this formal test tends to have lower accuracy in the results, when it is calculated for large samples. Imaging methods were used for further analysis, to examine if there are further indications on non-normality than the Shapiro-Wilk tests.

The graphical analysis of the Boxplots, QQ-plots and normal curve, frequency distribution histograms also showed that the data is normally distributed.

Since the required assumptions to apply ANCOVA are fulfilled, the analysis of covariance is applied to find out the effect of meditation on the dependent variable Academic Performance (DV3-AP).

10.3 Analysis of the real effect of Sahaja Yoga Meditation on the Academic Performance (DV3-AP)

10.3.1 Eliminating side-effects to get the real effect size of the intervention on Environmental Attitudes (DV1-EA) through ANCOVA

The analysis of the covariance (ANCOVA) is a sophisticated statistical method that can compare the outcome of two test groups (EG and CG), by comparing the characteristic key-measure of the two Means and at the same time controlling the predictable influence of the pre-test-results on the post-test outcomes³²¹. The difference of the Means is calculated by looking at the Variances with the help of F-tests³²². The Partial Eta-Square (PESQ) gives the size of the effect. The PESQ value tells how much of the observed effect can be explained through the intervention.

Table 43. Analysis of co-variance (ANCOVA) to compare the adjusted means of EG and CG in Academic Performance (DV3-AP)

Source of variation	Sum of Squares (SS)	Degree of freedom (df)	Mean Square (MS)	Value of F	Significance Value (SV) / p-value	Partial Eta-Square (PESQ)
Value of Contrast (between groups)	1361.32	1	1361.32	351.97	0.000	0.470
Value of Error (within groups)	1535.47	397	3.87			

³²¹ The error variance is reduced by eliminating the influence of distortion variables/ covariances. Here the pre-test is taken as the covariance. The results of the ANCOVA show the significance of the difference of the results between Experimental and Control Group, meaning if the difference is remarkable high enough to be attributed to the intervention or in case of no significance, if a difference between the Means of EG and CG in the post-test could also have appeared just by chance. The ANCOVA also informs in how far this difference is very unlikely to appear by random chance, but in how far it can be completely attributed to the intervention used.

³²² F-tests are named after Sir Ronald Fisher. F-tests show the relationship between Variances. Variances are a measure for the dispersion (or scatter) of a sample. They are the counter part of central tendency measures (like Mean, Median). The Variance shows how far stretched or squeezed the probability distribution of a sample is. Variance is the square of the standard deviation.

The table 43 reveals the results of the analysis of covariance (ANCOVA), to compare the adjusted means of the Experimental Group (EG) and Control Group (CG).³²³ The measures³²⁴ of the table are analyzed in greater detail in the following subchapters.

10.3.2 Significance of the effect

The level of significance is an imaginary line that shows, the occurrence of an event is by chance (this means not due to the treatment, not significant) or not by chance (this means due to the treatment, significant). Social Sciences and Management Research fix 95% as their level of significance.

The value of F^{325} (351.97) is found significant, because $p=0.000 < 0.05$. This proves that there exists a significant difference between the Adjusted Means of the Experimental Group (EG) and the Control Group (CG). A significant effect of Sahaja Yoga Meditation (SYM) on the Academic Performance (DV3-AP) was found in this research.

10.3.3 Level of assignability of the found effect to the intervention.

The Partial Eta Square³²⁶ is a measure that tells us in the context used in this research, how much of the variation – the difference in the effect sizes – is induced through the

³²³ This was done to find out "What is the effect of the treatment on the post-test that is not predictable from the pre-test (i.e., conditional on the pre-test)?" (Knapp, 2009, p. 1).

³²⁴ The Sum of Squares (SS) is the sum of the squared Standard Deviation (SD). The SS divided through the Degree of freedom (df) gives the Mean square (MS). These measures are calculated (by the software) to perform the technique of partitioning the SS (as a measurement of the spread) into the parts of deviation from the Mean that are caused by the treatments and the parts of deviation that are caused by error influences.

³²⁵ The F-test gives a ratio value of the variances between the groups and the variances within the group. If the computed p-value is small, then significant relationships exist.

³²⁶ The partial eta-square value (PESQ, also known as R^2) "is the ratio of the variance due to the treatment and the total variance. It produces a rough estimate of the of the size of the effect. (...) The value of R^2 will vary between 0.00 and 1.00 depending on the relative size of the treatment effects. It is a measure of the proportions of the total variance that is explained by the treatment effects" (Vincent, 1999, p.165-166).

dependent variable (Sahaja Yoga Meditation), after eliminating the amount of variation that could be explainable by another variable, the covariate, in our case the pre-test results.

The partial eta-square value (PESQ) found is 0.470. This means 47,0% of the change in Academic Performance can be explained through the treatment with meditation.

10.3.4 Size of the effect

The effect size that the intervention had on the dependent variable Academic Performance is calculated by taking the difference of the results of the Experimental Group and the results of the Control Group. In our case we take the measures of the Adjusted Means of EG and CG.

Table 44. Adjusted means of Experimental Group and Control Group in Environmental Attitudes (DV1-EA)

Groups	Adjusted Means	Standard Error (SE)	95% Confidence Interval (CI)	
			Lower Bound	Upper Bound
Experimental Group (EG)	74.63	0.14	74.35	74.90
Control Group (CG)	70.94	0.14	70.66	71.21

The table 44 reveals the results of the adjusted means related to the Experimental Group (EG) and Control Group (CG). In case of the Experimental Group, the observed adjusted mean is 74.63 (along with the Standard Error (SE) of 0.14 and Confidence Interval (CI) of 74.35 – 74.90). For the Control Group (CG), the observed adjusted mean is 70.94 (along with the Standard Error (SE) of 0.14 and Confidence Interval (CI) of 70.66 – 71.21).

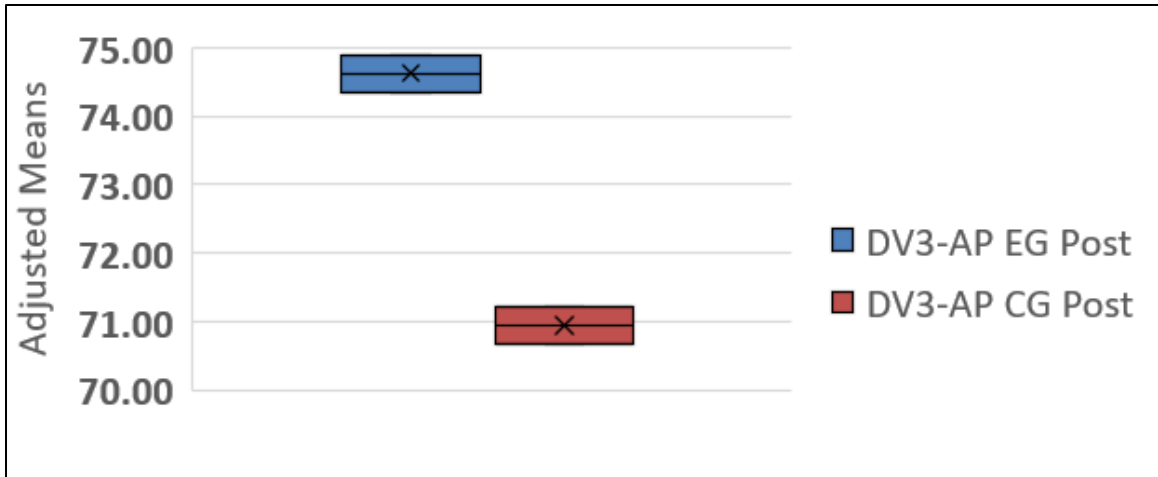


Figure 67: Boxplot of Adjusted Means values and Confidence Intervals (CI) of DV3-AP data for EG and CG

The boxplot (figure 67) visualizes the values of the previous table, namely the Confidence Intervals (CI) and the values of the Adjusted Means for the Experimental Group (EG) and the Control Group (CG) regarding the Academic Performance (DV3-AP) of the students.

Since, a significant effect of Sahaja Yoga Meditation (SYM) was found on the results of the Academic Performance (DV3-AP), the Adjusted Means are compared to find out the effect. Since the Adjusted Mean of the Experimental Group (74.63) is found higher than the Adjusted Mean of the Control Group (70.94). The intervention with Sahaja Yoga Meditation (SYM) is proved to bring a positive change in the Academic Performance (DV3-AP).

A significant difference between the effect of SYM is found among EG and CG. The difference between the Adjusted Means of the Experimental Group and the Control Group for the Academic Performance (DV3-AP) in this research is 3.69.

10.4 Placement of the results into context

10.4.1 Comparing the means with the norm values of Academic Performance

The Academic Performance of the secondary school students is collected through the academic results they achieved in their school examinations.

The grading system in secondary schools of Andhra Pradesh is based on the percentage level of marks that were achieved by the students during the school (half-) year. Today exist two systems that are used for transforming the percentage points into levels of achievement.

A ten-point system, from 1 to 10 points, with 10 points being the best score. The points 2 and 1 are not given as 3 points already means “failed”. In that way it can be also seen as eight-point system from 3 to 10 points.

The letter-system letter gradation system originates and is adapted from the English gradation system (letters from A-F). The gradation levels are the same as in the point system. There are in total eight grades A1, A2, B1, B2, C1, C2, D1 and D2 distributed from 100% to 0%, while again D2 means “failed” (and therefor the letter F is not given).

Table 45. Grading system in secondary schools of Andhra Pradesh in India

Points	Grade	Percentage of marks from-to
10	A1	91-100
9	A2	81-90
8	B1	71-80
7	B2	61-70
6	C1	51-60
5	C2	41-50
4	D1	35-40
3	D2	0-34

The table 45 displays the grading system (according to the percentage of marks and points) in secondary schools of Andhra Pradesh.

Table 46. Means of pre- and posts-test for EG and CG and their change value for DV3-AP data

Observation	Mean pre-test	Mean post-test	Change of the means
DV3-AP EG	70.55	74.63	4.08
DV3-AP CG	70.55	70.94	0.39

The table 46 above shows the pre- and post-test values of the means for the Experimental Group (EG) and the Control Group (CG) calculated by SPSS for the Academic Performance. It also shows the difference of post-test minus pre-test, expressing the change of the Means.

The pre-test value of the Mean of the students' grades is with 70.55 for both groups (EG and CG) the same (rounded on two positions after the decimal point). This corresponds to a level just between B1 and B2 (respective 8 and 7 points). The post-test mean of the Control Group is 70.94. The change of the means for CG (0.39), establishes the group a bit more just at the beginning of the "B1" grade while still in "B2" grade (7 points). The post-test value of the Experimental Group of 74.63 is well in the middle of the B1 grade (8 points). The range of the A, B and C grades are for each postfix-number 9%. So, the change of 4.08 for the mean of the EG represents a change of nearly a half of a grade level. The values of the table are displayed in the following graph.

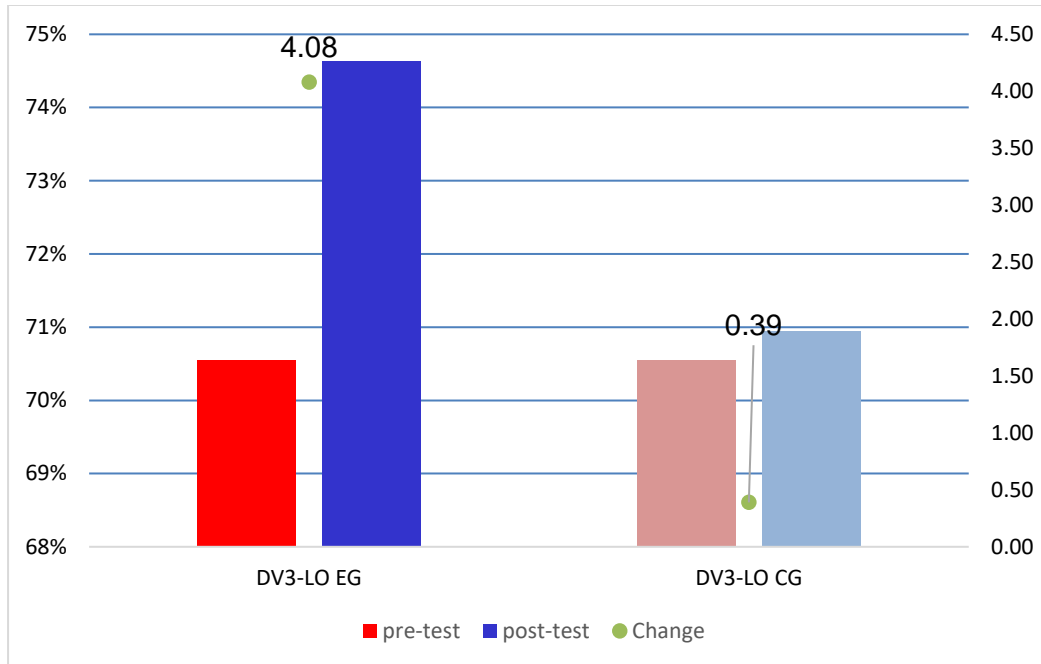


Figure 68: Normed Mean in % - Pre-Post Delta - EG & CG for DV3-AP (Academic Performance)

In the figure 68 the left y-axis, the primary axis, displays the percentage values of %Mean reached by EG and CG in the test on the dependent variable DV3. The red bar graphs represent the pre-tests, the blue bars the post-tests. The bars with bright color represent the EG, the washed out red and blue color represents the CG.

On the right y-axis, the secondary axis, the values of the change are displayed the values are represented by a green dot in the graph. In addition, the exact value of gain or loss from pre- to post-test in percentage points is given as a number in the data label above the bars belonging together.

The figure 68 (and the table 46) shows that the Experimental Group and the Control Group started with the same level of Academic Performance (70.55). After the intervention, the Academic Performance of the Control Group (70.94) was by 0.39 percentage points higher than before. After the intervention, the Academic Performance of the Experimental Group (74.63) was by 4.08 percentage points higher than before.

10.4.2 Transforming the Academic Performance (DV3-AP) values into a 100% scale to make the impact of the intervention on the three dependent variables comparable and intuitively easier to understand

The three tests for the dependent variables (DV1-EA, DV2-AA, DV3-AP) have scales of different length each. To put the average scores of pre- and posttest (Mean pre-test and Mean post-test) into an easier to interpret and understand format, the researcher transformed the values of DV1-EA and DV2-AA into percentage values.

The Academic Performance is already given in percentage values (additional to the point system and the letter system) so a mathematical transformation process was not needed in this case. But to keep a similar structure for each chapter that analyzes the three dependent variables this subchapter was opened also for DV3-AP.

Summary and conclusions from the findings of the analysis of DV3-AP

The descriptive statistics for DV3-AP showed a change of the Mean of the Experimental Group in the post-test. Through various statistical and graphical analysis methods the data was found to be normal distributed. This means the findings of the analysis can be generalized to the whole population (of 9th graders in government schools in Andhra Pradesh³²⁷).

³²⁷ Andhra Pradesh has now about 49.67 million inhabitants. In 2014 there was the separation of the Telanga state (35.19 million), that still has a similar school system and the same mother tongue Telugu. Together these states have a population of 84.86 million residents, which is more than the population of Germany (83.02 million) or France (66.99 million).

The findings of this chapter are:

- 1) Sahaja Yoga Meditation (SYM) is found to be effective in bringing a positive change regarding the Academic Performance.
- 2) In this research the Mean of the Academic Performance of the Experimental Group bettered by ca. 4 percentage points (as an average value) after the intervention with half a year regular Sahaja Yoga Meditation practice.
- 3) The Partial Eta-Square value (PESQ) of 0.470 justifies statistically the formulation that 47,0 % of the changes in the Academic Performance is explained by SYM.
- 4) The results of this research are significant and can be generalized on larger parts of the population.

11 Correlation among the three dependent variables EA, AA and AP: To check if there is any relation between the dependent variables regarding the effect of meditation

11.1 Assumptions related to parametric statistics.

The assumptions related to parametric statistics, namely normal distribution, has been tested during the applications of the ANCOVA. Since the assumption of normality have been fulfilled, Pearson's product moment method of correlation, Multiple Correlation and Partial Correlation can be applied.

11.2 Pearson's product moment method of correlation

“The Pearson product-moment correlation coefficient (Pearson’s correlation, for short) is a measure of the strength and direction of association that exists between two variables” (Laerd Statistics, 2018)³²⁸.

This means to find if there is an association between for example Academic Anxiety (DV2-AA) and Academic Performance (DV3-AP). It would be expected to be negative correlated: If there is a rise in DV2-AA for one student the DV3-AP values would be expected to go down. The Pearson’s correlation is calculated in the following for every DV for pre and post-test.

³²⁸ Laerd Statistics (2018). <https://statistics.laerd.com/spss-tutorials/pearsons-product-moment-correlation-using-spss-statistics.php>

Table 47. Coefficients of Correlation along with significance in relation to the interrelationship between all the three selected variables (EA, AA, AP) of two observations (pre- and post-tests)

Variable / Observation		DV1- EA pre (x1)	DV1- EA post (x2)	DV2- AA pre (y1)	DV2- AA post (y2)	DV3- AP pre (z1)	DV3- AP post (z2)
DV1-EA pre (x1)	Coefficient of Correlation	1	.877**	-.775**	-.617**	.804**	.785**
	Significance (2-tailed)		0.000	0.000	0.000	0.000	0.000
DV1-EA post (x2)	Coefficient of Correlation	.877**	1	-.690**	-.765**	.707**	.746**
	Significance (2-tailed)	0.000		0.000	0.000	0.000	0.000
DV2-AA pre (y1)	Coefficient of Correlation	-.775**	-.690**	1	.809**	-.889**	-.860**
	Significance (2-tailed)	0.000	0.000		0.000	0.000	0.000
DV2-AA post (y2)	Coefficient of Correlation	-.617**	-.765**	.809**	1	-.732**	-.781**
	Significance (2-tailed)	0.000	0.000	0.000		0.000	0.000
DV3-AP pre (z1)	Coefficient of Correlation	.804**	.707**	-.889**	-.732**	1	.980**
	Significance (2-tailed)	0.000	0.000	0.000	0.000		0.000
DV3-AP post (z2)	Coefficient of Correlation	.785**	.746**	-.860**	-.781**	.980**	1
	Significance (2-tailed)	0.000	0.000	0.000	0.000	0.000	
**. is significant at .01 level of significance							

The important values of the table 47 are highlighted in yellow. The table shows that a significant relationship was found between:

DV1-EA pre and DV2-AA pre ($r_{x1.y1} = -0.775$, $p < 0.01$),

DV1-EA post and DV2-AA post ($r_{x2.y1} = -0.765$, $p < 0.01$),

DV2-AA pre and DV3-AP pre ($r_{y1.z1} = -0.889$, $p < 0.01$),

DV2-AA post and DV3-AP post ($r_{y2.z2} = -0.781$, $p < 0.01$),

DV1-EA pre and DV3-AP pre ($r_{x1.z1} = 0.804$, $p < 0.01$),

DV1-EA post and DV3-AP post ($r_{x2.z2} = 0.746$, $p < 0.01$).

The relationships of DV1-EA pre and DV2-AA pre is found to have a negative value, this shows that if the Academic Anxiety (measured in DV2-AA pre) is decreasing, the Environmental Attitude (measured in DV1-EA pre) is increasing significantly.

The relationships of DV1-EA post and DV2-AA post is found negative, this shows that if the Environmental Attitude (measured in DV1-EA post) increases, the Academic Anxiety (measured in DV2-AA pre) decreases significantly.

The relationships of DV2-AA pre and DV3-AP pre is found negative, this shows that if the academic anxiety (measured in DV2-AA pre) increases, the Learning Outcomes (measured in DV3-AP pre) are decreasing significantly.

The relationships of DV2-AA post and DV3-AP post is found negative, this shows that if the academic anxiety (measured in DV2-AA post) increases, the Learning Outcomes (measured in DV3-AP post) decrease significantly.

The relationships of DV1-EA pre and DV3-AP pre is found positive, this shows that if the Environmental Attitudes (measured in DV1-EA pre) increase, the Academic Results (measured in DV3-AP pre) also increases significantly.

The relationships of DV1-EA post and DV3-AP post is found positive, this shows that if Learning Outcomes (measured in DV3-AP post) increase, the Environmental Attitudes (measured in DV1-EA post) also increase significantly.

Conclusion:

Mathematically the relationship between the dependent variables is characterized by the following statements: If anxiety decreases, the environmental attitudes as well as the academic results increase. It also means that when the academic results increase, the environmental attitudes increase.

As it is a reciprocal relationship, this does not say anything about what is the cause and what is the effect, it also means that, if the environmental attitudes increase, the academic results increase and the academic anxiety decreases.

Taking into consideration that a decrease in anxiety is something positive, the overall message is that there was a positive improvement in the three variables. But there seems to be some kind of influence or effect between the variables. Final reasoning, taking into account the further observations, will be necessary to draw causal conclusions.

11.3 Multiple Correlation

Here the multiple correlation coefficient (R) explains to what degree the movements in on DV is connected to the movements of the other two DV. The R value is situated between 0 and 1 and can also be stated in percentages from 0% to 100%. A level of 100% or 1 means that the movement of the DV written first, can be fully explained by the movement of the other two variables.

Table 48. Multiple correlation coefficient of three selected variables (DV1-EA, DV2-AA, DV3-AP) in relation to different observations (pre- and post-test)

Combinations	R (coefficient of multiple correlation)
DV1-EA pre (x1) - DV2-AA pre (y1), DV3-AP pre (z1)	0.815**
DV1-EA post (x2) - DV2-AA post (y2), DV3-AP post (z2)	0.801**
DV2-AA pre (y1) - DV1-EA pre (x1), DV3-AP pre (z1)	0.895**
DV2-AA post (y2) - DV1-EA post (x2), DV3-AP post (z2)	0.828**
DV3-AP pre (z1)- DV1-EA pre (x1), DV2-AA pre (y1)	0.908**
DV3-AP post (z2) - DV1-EA post (x2), DV2-AA post (y2)	0.815**
**. is significant at a0.01 level of significance	

The above table 48 shows that significant relationship of multiple correlation of DV1-EA pre was found significant with DV2-AA pre and DV3-AP pre ($R_{x_1.y_1z_1} = 0.815$, $p < 0.01$), and the significant relationship of multiple correlation of DV1-EA post was found significant with DV2-AA post and DV3-AP post ($R_{x_2.y_2z_2} = 0.801$, $p < 0.01$), and the significant relationship of multiple correlation of DV2-AA pre was found significant with DV1-EA pre and DV3-AP pre ($R_{y_1.x_1z_1} = 0.895$, $p < 0.01$), and the significant relationship of multiple correlation of DV2-AA post was found significant with DV1-EA post and DV3-AP post ($R_{y_2.x_2z_2} = 0.828$, $p < 0.01$), and the significant relationship of multiple correlation of DV3-AP pre was found significant with DV1-EA pre and DV2-AA pre ($R_{z_1.x_1y_1} = 0.908$, $p < 0.01$), and the significant relationship of multiple correlation of DV3-AP post was found significant with DV1-EA post and DV2-AA post ($R_{z_2.x_2y_2} = 0.815$, $p < 0.01$).

Conclusion:

It means always the two later variables influence the first variable in all selected circumstances. Both variables jointly contribute to the first variable in all selected circumstances.

This means the measured variables are significantly interrelated with each other.

11.4 Partial Correlation

We use the partial correlation to examine the relationship between two variables, after eliminating the effect of the third variable.

Table 49. Partial correlation coefficient of three selected dependent variables (DV1-EA, DV2-AA, DV3-AP) in relation to different observations (pre- and post-test)

Combinations	$\rho = \text{rho}$ (Coefficient of partial correlation)
DV1-EA pre (x1) and DV2-AA pre (y1) minus DV3-AP pre (z1)	-0.22**
DV1-EA post (x2) and DV2-AA post (y2) minus DV3-AP post (z2)	-0.44**
DV1-EA pre (x1) and DV3-AP pre (z1) minus DV2-AA pre (y1)	0.40**
DV1-EA post (x2) and DV3-AP post (z2) minus DV2-AA post (y2)	0.37**
DV2-AA pre (y1) and DV3-AP pre (z1) minus DV1-EA pre (x1)	-0.71**
DV2-AA post (y2) and DV3-AP post (z2) minus DV1-EA post (x2)	-0.49**
**. is significant at .01 level of significance	

The table 49 shows that a significant relationship of partial correlation between DV1-EA pre (x1) and DV2-AA pre (y1) after eliminating the effect of DV3-AP pre (z1) was found significant with $\rho_{x_1y_1.z_1} = -0.22$ ($p < 0.01$).

The table shows that a significant relationship of partial correlation between DV1-EA post (x2) and DV2-AA post (y2) after eliminating the effect of DV3-AP post (z2) was found significant with $\rho_{x_2y_2.z_2} = -0.44$ ($p < 0.01$).

The table shows that a significant relationship of partial correlation between DV1-EA pre (x1) and DV3-AP pre (z1) after eliminating the effect of DV2-AA pre (y1) was found significant with $\rho_{x_1z_1.y_1} = 0.40$ ($p < 0.01$).

The table shows that a significant relationship of partial correlation between DV1-EA post (x2) and DV3-AP post (z2) after eliminating the effect of DV2-AA post (y2) was found significant with $\rho_{x_2z_2.y_2} = 0,37$ ($p < 0.01$).

The table shows that a significant relationship of partial correlation between DV2-AA pre (y1) and DV3-AP pre (z1) after eliminating the effect of DV1-EA pre (x1) was found significant with $\rho_{y_1z_1.x_1} = -0.71$ ($p < 0.01$).

The table shows that a significant relationship of partial correlation between DV2-AA post (y2) and DV3-AP post (z2) after eliminating the effect of DV1-EA post (x2) was found significant with $\rho_{y_2z_2.x_2} = -0,49$ ($p < 0.01$).

Conclusion: In all the six pairs significant relationship was found after eliminating the effect of the remaining third variable. This means even if the effect of the third variable is blocked, still a significant relationship remains between the two selected variables.

Conclusion regarding the correlations

What was found out regarding the correlations was that there is a correlation to be observed between the dependent variables, means if the values of one dependent variable goes up an effect in upward direction can be seen on the values of another dependent variable, while the values of one variable went into the other direction (down).

To put it into other words, an increase in Environmental Attitudes (DV1-EA) is beneficial, in the same way an increase of the Academic Performance (DV3-AP) is considered to be beneficial, while for Academic Anxiety (DV2-AA) a decrease would be considered beneficial. So, it was found out, when Sahaja Yoga Meditation was applied, beneficial effects were found in all three dependent variables.

One could check and discuss the statistical relationships between the test-results in even greater detail than it was done, but this seems to be of no big gain in knowledge to the researcher.

From logic reasoning, it is likely that there is a relationship between Academic Anxiety and Academic Performance. When there is less anxiety the performance of the student will be

better and vice versa. How high the correlation found here between these two dependent variables is, finally depends on the value structures of the two questionnaires used. But they weren't designed to be combined for the purpose to find a relationship between these two variables, and they weren't standardized to be used together, so it would be difficult to define how much Academic Anxiety needs to decrease by a certain amount to achieve the increase in school performance on another certain amount. If this numbers were to be calculated here in the final consistency, the results would be very closely linked to the two questionnaires used in this research, but of little explanatory value in general. As part of the literature research, a model was sought that would explain these relationships more precisely and also in relation to meditation, but no satisfactory model was found

Indeed, it is an interesting research topic, that could be investigated further, but here it was better to concentrate on the effects of meditation. The effects of Sahaja Yoga Meditation have been found to be beneficial for the (decrease of the) Academic Anxiety as well as for the Academic Performance. Meditation theory points out that there are multidimensional effects. In theory, there is no indication from which we could conclude that SYM would work only on the Academic Anxiety (DV2-AA) and that a rise in Academic Performance (DV3-AP) would result out of the influence of SYM on DV2-AA or vice versa. The meditation theory says SYM influences both directly. That there are correlating effects between both is undisputed, but they are not the point here. The interviews with the students and teachers indicated the same interpretation. There were students who lost stage fear or gained confidence and their Academic Performance got better through this, but there were also students who got more interested into certain subjects and gained in their academic performance in that subject. And again, a better performance will lead to a decrease of academic anxiety in that subject. Other students changed their academic behavior and got generally more interested or more disciplined. The reasons given by the students were plenty, so that no linear relationship between the two variables seems to be likely in the case of intervention with SYM.

After logical consideration, the researcher also shies away from constructing a different relationship between Academic Anxiety and Academic Performance on the one hand and Environmental Attitudes on the other, except that all three DVs have been a positively influenced through the intervention with Sahaja Yoga Meditation. Throughout the research

no indicators of a correlation were found such that higher or lower Academic Anxiety or Academic Performance would directly affect attitudes towards the environment. Rather, it was found that the students experienced a feeling of connectedness with nature through meditation, others said that they gained a greater respect for the environment, still others said that meditation increased their desire to do something for the environment, and that they felt the urge to put into practice the knowledge they had before.

All this indicates that SYM had a direct primary effect on each of the dependent variables (DV1-EA, DV2-AA and DV3-AP). Secondary effects between DV2-AA and DV3-AP seem likely, but not necessarily existent in all cases and if existent not in a linear unidirectional cause and effect structure but in a reciprocal relationship. There were no indications found for secondary effects between DV1-EA on one side and DV2-AA or DV3-AP on the other side, apart from the statistical data.

But in another way the existing relationship between DV2-AA and DV3-AP can be of consequence to this research. Their influences were found to be the strongest amongst the possible combinations of partial correlation (with $\rho_{y_1z_1.x_1} = -0.71$ and $\rho_{y_2z_2.x_2} = -0.49$ (with $p < 0.01$)). The Partial Eta Squared (PESQ) of DV2-AA and DV3-AP were considerably lower than for DV1-EA, meaning the proportion of effects that can be attributed to the intervention with SYM only was lowered, due to the statistical secondary effects between DV2-AA and DV3-AP.

PART IV:
DISCUSSION OF THE RESULTS,
TESTIMONIES AND CONCLUSION

12 Discussion of the quantitative results of the present study

The previous chapters proved for all scales, a significant effect, that is correlated with the intervention. To discuss the main results – the changes through the intervention of Sahaja Yoga Meditation on the dependent variables – we put them in an easier understandable format, we transform the results into percentage values.

12.1 The explanatory power of the results

Table 50. Analysis of co-variance (ANCOVA) to compare the adjusted means of EG and CG of both genders together.

Observation	Source of variation	Sum of Squares (SS)	Degree of freedom (df)	Mean Square	Value of F	Significance Value (SV) / p-value	Partial Eta-Square (PESQ)
DV1-EA	Value of Contrast (between groups)	25482	1	25482	1107	0.000	0.736
DV1-EA	Value of Error (within groups)	9135	397	23			
DV2-AA	Value of Contrast (between groups)	19741	1	19741	116	0.000	0.227
DV2-AA	Value of Error (within groups)	67310	397	169			
DV3-AP	Value of Contrast (between groups)	1361	1	1361	351	0.000	0.470
DV3-AP	Value of Error (within groups)	1535	397	4			

The table 50 reveals the results of the analysis of covariance (ANCOVA), to compare the adjusted means of the Experimental Group (EG) and Control Group (CG). This was done to find out "What is the effect of the treatment on the post-test that is not predictable from the pre-test (i.e., conditional on the pre-test)?" (Thomas R. Knapp 2009, S. 2).

The Partial Eta Squared (PESQ) gives the proportion of effects that was shown statistically to be attributed only to the intervention with SYM, that could not be explained through other variables. For DV1-EA PESQ is 73,6% for DV2-AA 22,7% and for DV3-AP 47%.

The Partial Eta Squared (PESQ) of DV2-AA and DV3-AP were considerably lower than for DV1-EA, meaning the part of effects that was shown that is to be attributed only to the intervention with SYM was lower. In the previous chapter it was shown that for DV2-AA and DV3-AP there existed secondary effects of correlation between them. This means the Academic Anxiety influences the Academic Performance and vice versa. Their influences were found to be the strongest amongst the possible combinations of partial correlation (with $\rho_{y_1z_1.x_1} = -0.71$ and $\rho_{y_2z_2.x_2} = -0,49$ (with $p < 0.01$)). As parts of the beneficial improvements of SYM in these dependent variables originate primary from SYM but also secondary can be explained through a correlation between DV2-AA and DV3-AP, this part of explanatory power is no longer attributed to SYM only and therefore explains the lower percentage levels of DV2-AA 22,7% and for DV3-AP 47%. The analysis of the previous chapter also showed correlation levels between DV1-EA and the other DVs, which means that the actual effects of SYM might be also higher than the PESQ value suggests.

This is to be seen in the light of the previous qualitative analysis that SYM primarily shows effects on the measured dimensions directly. It is not theorized that SYM shows effects only e.g., on one DV DV2-AA and that that DV2-AA shows an effect on another DV3-AP, but that SYM does not show a direct effect on DV3-AP. This scenario has been found to be untrue, quite the opposite was found in the qualitative analysis, namely that SYM exerted effects on all three DVs directly, with some possible interferences between the DVs. But this would not indicate a lower effect of SYM (and higher by chance effects) measured, but rather a blur in the discriminatory power of the two variables DV2-AA and DV3-AP, which in part are influenced by the same parameters, like self-confidence and self-security, etc.

12.2 Main effects of the intervention on the three dependent variables

The three tests for the dependent variables (DV1-EA, DV2-AA, DV3-AP) used in Part II have scales of different length each. The scale of DV1-EA ranges from Minimum 61 to a Maximum of 223 possible reachable points; Minimum 44 to Maximum 116 for DV2-AA, and for DV3-AP from Minimum 0 to Maximum 100. To put the average scores of pre- and post-test (Mean pre-test and Mean post-test) into an easier to interpret and understand format, the researcher transformed them into percentage values (%Mean pre-test and %Mean post-test). This is done as a normative process. The difference between the %Mean post-test value and the %Mean pre-test value can be seen in the “Change in percent points” column.

Table 51. pre- and post-test values of Change in percent points, of Means, % Means with the values for Minimum / Maximum score of each observation (DV1-EA, DV2-AA, DV3-AP) in both groups (Experimental and Control Group).

Observation	Mean (pre-test)	Mean (post-test)	Min Score	Max Score	% Mean (pre-test)	% Mean (post-test)	Change in percent points
DV1-EA EG	170.01	187.52	61	223	67.29%	78.10%	10.81
DV1-EA CG	170.16	171.75	61	223	67.38%	68.36%	0.98
DV2-AA EG	86.74	69.33	44	132	48.57%	28.78%	-19.78
DV2-AA CG	86.69	83.38	44	132	48.51%	44.75%	-3.76
DV3-AP EG	70.55	74.63	0	100	70.55%	74.63%	4.08
DV3-AP CG	70.55	70.94	0	100	70.55%	70.94%	0.39

The table 51 shows the pre-and post-test means of the observations for the three variables (DV1-EA, DV2-AA, DV3-AP) in both groups (Experimental and Control Group). Along with the minimum score and the maximum score of each test, according to the normative values, the percentage values of the means are calculated and shown (% Mean = (Mean Score – Min. Score) / Max. Score – Min. Score). The last column shows the change between % Mean post-test minus % Mean pre-test in percentage points.

The key values of the table are displayed in the following graph.

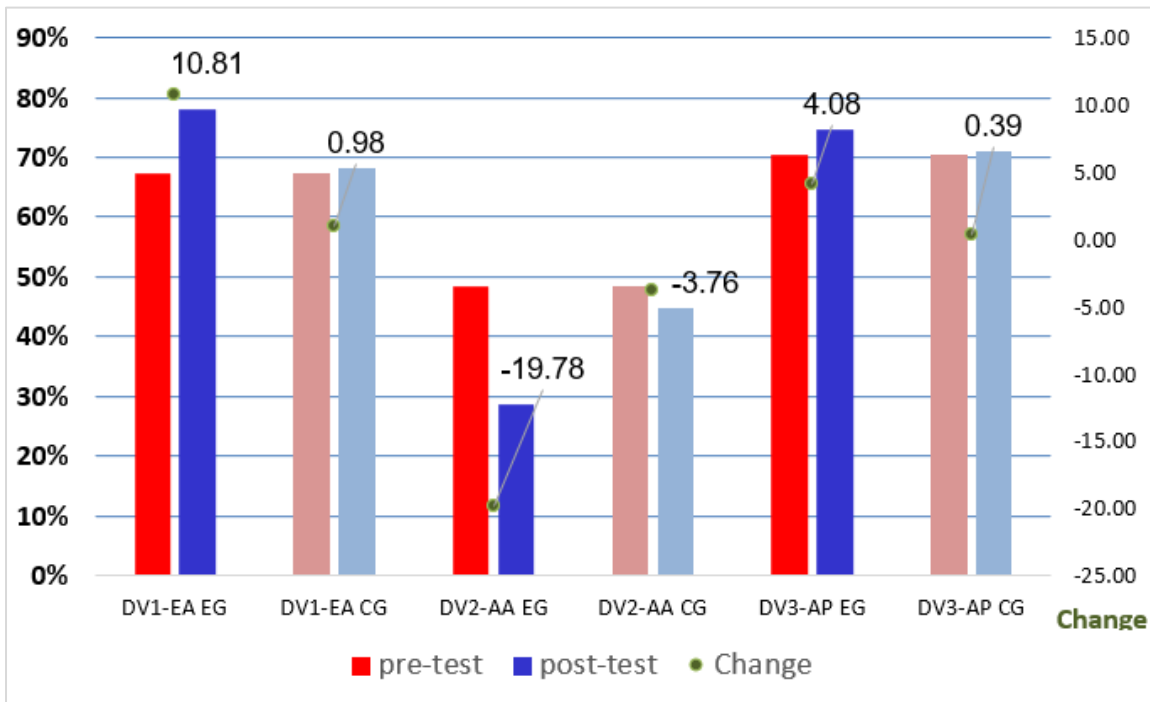


Figure 69: Normed Mean in Percent for pre- and post-test and change for EG and CG

In the figure 69 the left y-axis, the primary axis, displays the percentage values of %Mean reached by EG and CG in the test on the dependent variables DV1, DV2, DV3. The red bar graphs represent the pre-tests, the blue bars the post-tests. The bars with bright color represent the EG, the washed out red and blue color represents the CG.

On the right y-axis, the secondary axis, the values of the change are displayed the values are represented by a green dot in the graph. In addition, the exact value of gain or loss from pre- to post-test in percentage points is given as a number in the data label above the bars belonging together.

The figure (and the table) shows that the Experimental Group (EG) gained from pre-test (67.29 %) to post-test (78.10 %) 10,81 percentage points in their environmental attitude (DV1-EA), the original anxiety level (48.57 %, “above average”) of DV2-AA EG was lowered by 19.78 percentage to an “average” level (28.78 %) that is at the edge of the “below average” level. The academic results for the learning outcomes (DV3-AP) of EG

were 4.08 percentage points higher at the end of the intervention (74.63 %), compared to the beginning of the research (70.55 %).

The Control Group (CG) gained from pre-test (67.38%) to post-test (68.36%) 0.98 percentage points in their environmental attitude (DV1-EA), the original anxiety level (“above average”) of DV2-AA CG was lowered by 3.76 percentage points (from 48.51% to 44.75%) and the academic results of DV3-AP CG were 0.39 percentage points higher at the end of the intervention (70.94%), compared to the beginning of the research (70.55%).

12.3 DV1-EA Examination of subcategories and comparison of effect size on EG and CG

The questionnaire (EAS) that was used to measure the Environmental Attitudes also contained subcategories that were measured.

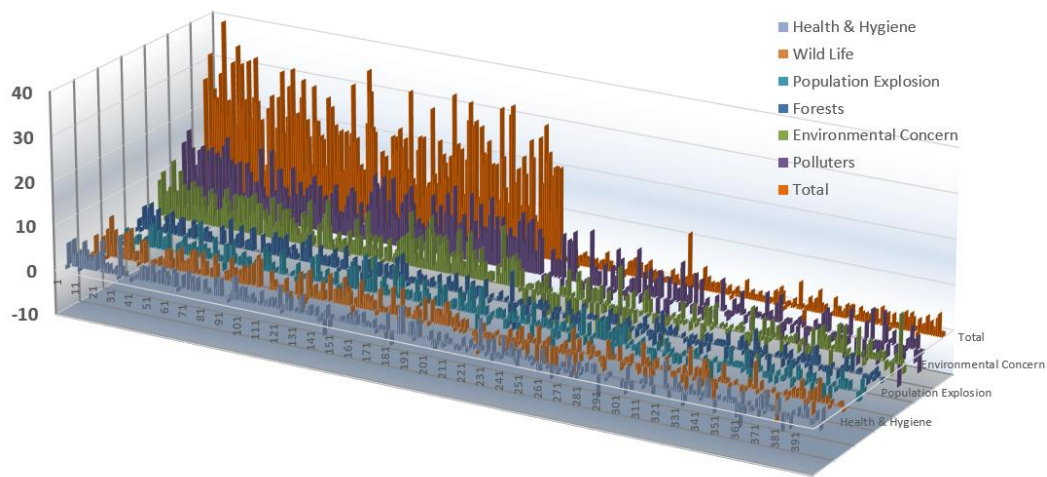


Figure 70: bar chart diagram of value changes between pre- and post-test of subdivisions of DV1-EA test for every individual of EG and CG

The three-dimensional figure 70 shows the value changes in every subcategory and the total sum of the changes regarding the Environmental Attitudes for every student of the project. On the x-axis the first 200 bars represent the changes of the Experimental Group (EG), the bars 201-400 represent the changes that occurred with the students of the

Control Group (CG) between the pre-test and the post-test. Positive changes (higher post-test score than pre-test score) result in a higher bar in the direction of the y-axis, negative changes result in a downward bar.

From the visualization the following conclusion can be drawn. In the different subcategories there are upward and downward bars for the CG students (right side), while almost only upward bars for the EG. Nevertheless, all total results (last row on the z-axis) of the EG and almost all of the CG were positive. The Experimental Group outperformed the Control Group clearly.

It may seem that there were higher changes in the subcategories of Environmental Concern and Polluters, but this is due to a higher proportion of questions in those two categories, as the next table shows. According to the proportion and the weight that the subcategories had in the questionnaires the percentage values reached, were considerably close together.

Table 52. DV1-EA value scores in percentage of total score table for EG and CG in pre- and post-test

	DV1-EA CG Pre	DV1-EA EG Pre	DV1-EA CG Post	DV1-EA EG Post	DV1-EA CG delta	DV1-EA EG delta
Population Explosion	56.3%	56.4%	58.6%	66.3%	2.3%	10.0%
Wild Life	59.5%	56.9%	59.9%	66.9%	0.4%	10.0%
Polluters	59.9%	60.1%	60.9%	69.3%	1.0%	9.3%
Environmental Concern	60.5%	59.4%	60.8%	69.7%	0.3%	10.3%
Health & Hygiene	59.8%	61.8%	61.4%	70.7%	1.7%	8.9%
Forests	59.3%	61.6%	60.2%	71.4%	0.9%	9.8%
Total	59.6%	59.6%	60.5%	69.2%	0.9%	9.6%

The table 52 shows the percentage the EG, and the CG reached in the different subcategories of DV1-EA (Population Explosion, Wild Life, Polluters, Environmental Concern, Health & Hygiene, Forests). In the pre-test the total percentage values reached were the same for EG and CG (59,6%), while the results varied a bit up and down this value in the subcategories. In total the changes (delta) were 9.6% for the EG and 0.9% for the CG. As the changes were found to be significant for the EG and for the CG, we can

exclude random causes also for the small change of 0.9% of the CG. And we can verify a change for EG and CG in the Ratio 10 to 1.

12.4 DV2-AA Examination of subcategories and comparison of effect size on EG and CG

The questionnaire (Academic Anxiety Scale, AAS) that was used to measure the Academic Anxiety also contained subcategories that were measured.

Table 53. DV2-AA value scores in percentage of total score per subcategory for EG and CG in pre- and post-test

	DV2-AA CG Pre	DV2-AA EG Pre	DV2-AA CG Post	DV2-AA EG Post	DV2-AA CG delta	DV2-AA EG delta
Academic Anxiety	38.4%	40.3%	42.2%	21.8%	-3.9%	18.5%
Poor Study Habits	45.8%	48.0%	45.9%	28.6%	-0.1%	19.4%
Subjects	50.4%	55.3%	43.6%	59.4%	6.8%	-4.1%
School Environment	49.3%	43.4%	42.8%	38.0%	6.5%	5.4%
Teachers	51.4%	50.7%	43.7%	35.0%	7.8%	15.7%
Examinations	54.0%	53.7%	49.2%	4.1%	4.8%	49.7%
Total	48.5%	48.6%	44.8%	28.8%	3.8%	19.8%

The table 53 shows the percentage the EG, and the CG reached in the different subcategories of DV2-AA (Academic Anxiety, poor Study Habits, Subjects, School Environment, Teachers, Examinations). In this representation, a positive change in value means a “positive” performance, namely a reduction in anxiety. In the pre-test the total percentage values reached were the same for EG and CG (65,7%), while the results varied a bit up and down this value in the subcategories. In total the changes (delta) were 19.8% for the EG and 3.8% for the CG. As the changes were found to be significant for the EG and for the CG, we can exclude random causes also for the change of 3.5% of the CG. And we can verify a change for EG and CG in the Ratio 10 to 2 (20%).

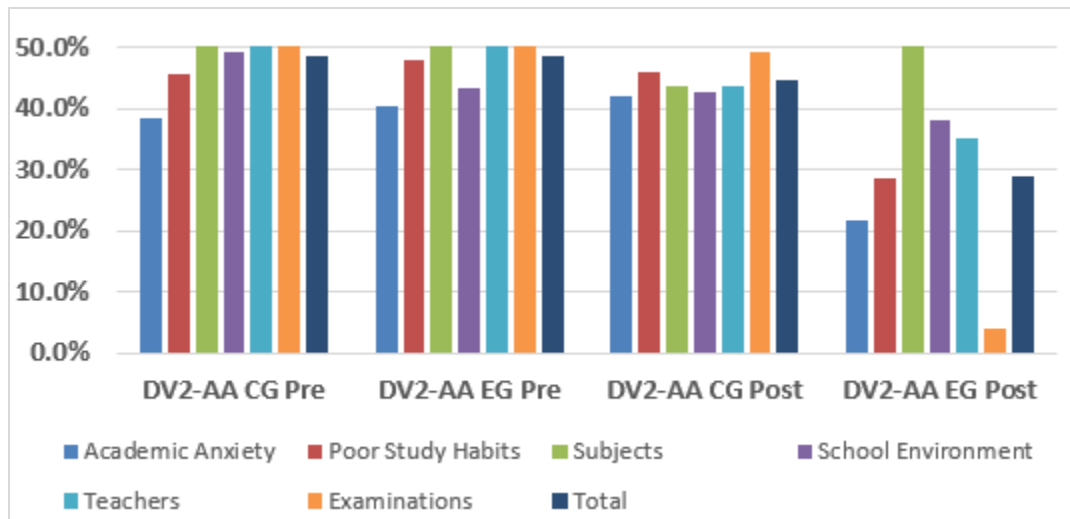


Figure 71: bar chart diagram of value scores in percentage of total score per subcategory of AAS for EG and CG in pre- and post-test

The figure 71 shows the percentage the EG, and the CG reached in the different subcategories of DV2-AA (Academic Anxiety, poor Study Habits, Subjects, School Environment, Teachers, Examinations) for pre- and post-test. We can see that the bar charts of the pre-test of EG and CG look quite similar with small variations. In comparison of the pre-test and the post-test charts of CG we see a similar structure, with a slightly lower level for the bars of the post-test. The bar charts of the EG show a significant lower level in the post-test situation, compared to the pre-test of EG.

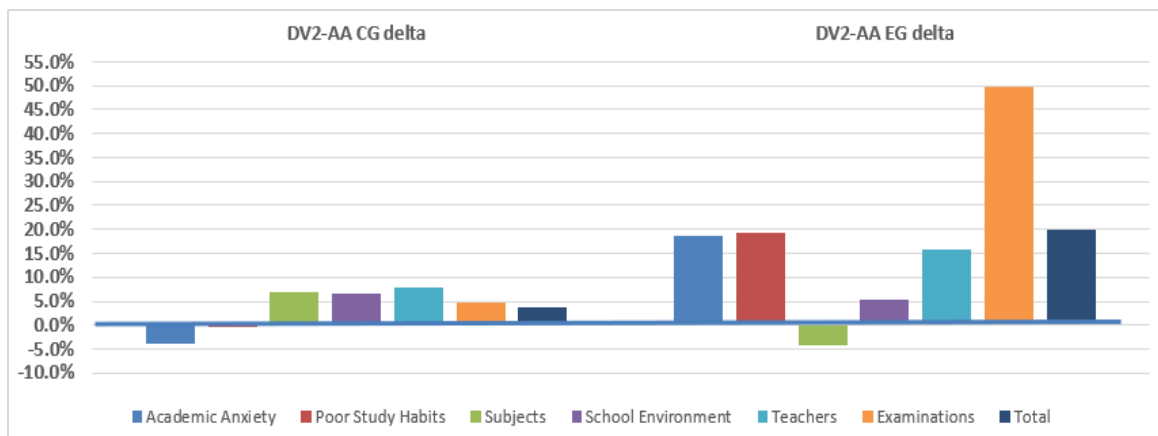


Figure 72: bar chart diagram of value changes between pre- and post-test of subdivisions of DV2-AA test for EG and CG

The figure 72 shows the changes (delta) in percentage points between pre- and post-test for the EG and the CG reached in the different subcategories of DV2-AA (Academic Anxiety, poor Study Habits, Subjects, School Environment, Teachers, Examinations). A positive absolute score of change means that the anxiety level has fallen at the time of the second test, compared to a higher level of anxiety at the beginning of the experiment. The changes for EG are higher than the changes for CG. In both Groups we see a positive change (fall of anxiety levels) in almost every subcategory, except a negative by 4.1% for EG in anxiety due to the subject and 3.9% rise of general academic anxiety and 0.1% due to poor study habits for the CG. These little rises may be since these are average scores as the next graph explains.

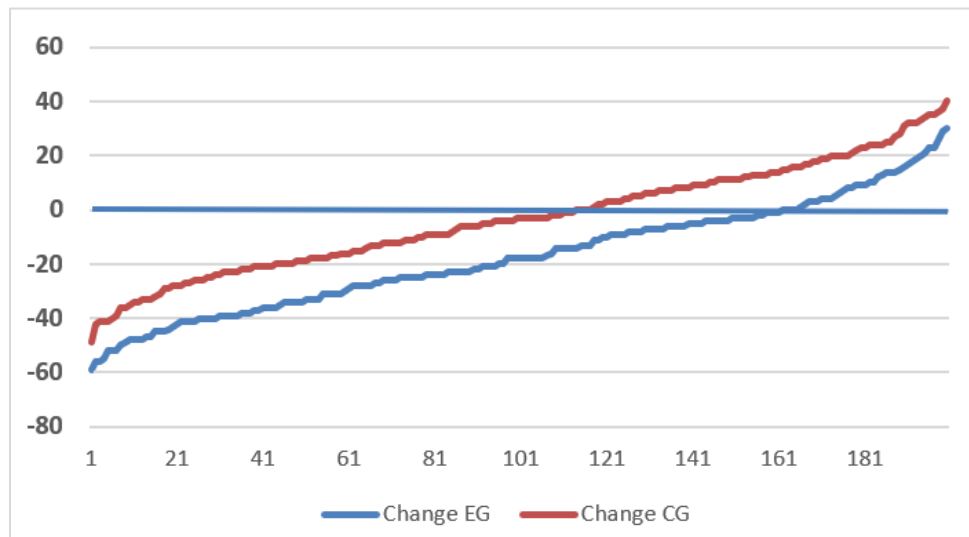


Figure 73: line diagram of the total score value changes between pre- and post-test of DV2-AA for EG and CG

The line diagram (Figure 73) shows the distribution of the total score value changes for DV2-AA arranged in ascending order for EG and CG. A negative score value means a fall of the anxiety level in the post-test, compared to the pre-test. The two graphs have a similar course with similar slopes. The blue line of the EG is placed either below or right of the CG curve. This shows a bigger reduction of anxiety levels in the Experimental Group; and also, more students (161) of the EG reduced their overall Academic Anxiety level compared to 113 students who reduced their Academic Anxiety level in the CG. The two graphs also show that there were cases of higher anxiety in the post-test situation.

This may be explained to normal random variations through external factors not controlled by the experiment. A potential influence not measured by the questionnaire would be for example a higher level of pressure from the parents on the student. As the positive and negative changes in the CG are almost, but not exactly half (113:87) and the change beneficial change in the CG mostly explained through the secondary effect of the meditating group on the CG. A non-beneficial change (means a rise of anxiety) for some individuals of the EG due to the intervention seems to be very unlikely as there were no reports by the students or teachers pointing into that direction.

12.5 DV3-AP - Main effect on the Academic Performance through the intervention

The average grades of large groups of students (like 200 in EG and CG each) would be expected to be constantly normal distributed and most probably with the same mean value over the years. In other words, one would expect some students developing better throughout an academic half-year and some students losing some points in one or another subject, but the average grade of the class would be the same. Also, the amount of variation will be limited in most cases. There may be a small betterment in one subject, for example when the student puts in some extra learning efforts, but the betterment will be limited to small number of subjects, like one or two. Low performance students normally don't become high performance students. Most of the students get the same grades throughout their schooldays.

In the pre-test (DV3-AP Pretest) the means of the Experimental Group and Control Group were the same with a value of 70.55 (%). Having two large, normally distributed groups with the same mean one would expect the same result after some time, if there was no extraordinary incidence, a constant result would be considered to be normal.

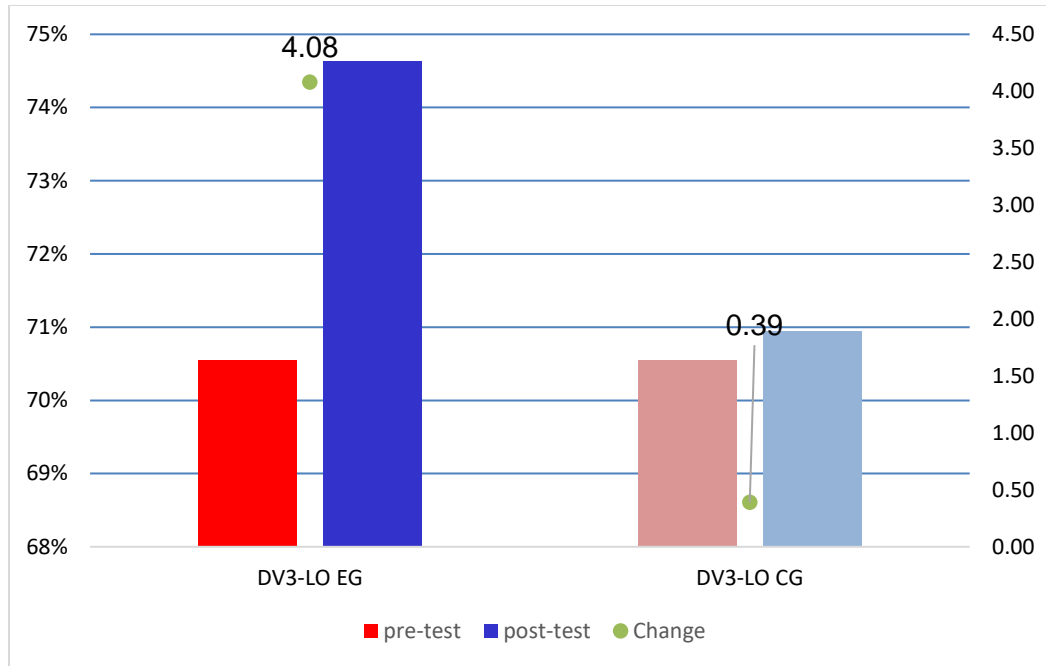


Figure 74: Normed Mean in % - Pre-Post Delta - EG & CG for DV3-AP (Academic Performance)

Figure 74 shows the Normed Mean in %, the difference between pre- and post-test for EG and CG for DV3-AP (Academic Performance). The average improvement in the learning outcomes of approximately 4% by the Experimental Group (74.63, DV3-AP EG post-test) seems to be very remarkable. The Control Group showed a betterment of 0.39 percentage points in the second academic half year (70.94, DV3-AP CG post-test).

Table 54. Grading system in secondary schools of Andhra Pradesh in India

Points	Grade	percentage marks (from - to)
10	A1	91 - 100
9	A2	81 - 90
8	B1	71 - 80
7	B2	61 - 70
6	C1	51 - 60
5	C2	41 - 50
4	D1	35 - 40
3	D2	0 - 34

The table 54 shows that each grade or point level spans 10 percentage points, except the D1 and D2 Grade, D1 (4 points) is covered by only 5 percentage points. 35% is the minimum percentage to pass an exam. The D2 / 3 points level covers everything below and leads to a failure of the exams.

STUDENT'S PROGRESS REPORT 201 - 201																			
Student's Name :		Class				Division				No									
SUBJECT		Formative Assessment				Summative Assessment		4FA's + 2SA's	Internal	SA3	Total	Month	No. of School Days	No. of Days Present					
		FA1 50	FA2 50	FA3 50	FA4 50	SA1 80	SA2 80	360/18 20	80	100									
TELUGU	M											JUN							
	G										JUL								
HINDI	M										AUG								
	G										SEP								
ENGLISH	M										OCT								
	G										NOV								
MATHS	M										DEC								
	G										JAN								
P.S.	M										FEB								
	G										MAR								
N.S.	M										APR								
	G										TOTAL								
											%								
SOCIAL	M										Grade	A1	A2	B1	B2	C1	C2	D1	D2
	G										Marks	91 - 100	81 - 90	71 - 80	61 - 70	51 - 60	41 - 50	35 - 40	0 - 34
											Points	10	9	8	7	6	5	4	3
Class Teacher Sign.		FA1		FA2		SA1		FA3		SA2		FA4		SA3					
Sign. of the Parent/ Guardian																			

Figure 75: picture of blank students' progress report

The figure 75 shows a Students Progress Report card. The subjects are shown on the left. The grading system is printed down on the right side. The students are thought in six subjects³²⁹, physical science and natural science (P.S. and N.S.) are combined to one subject, each of both incur by 50% into the combined subject. The arithmetic mean value of the six subjects, is the result of their whole Academic Report (DV3-AP).

³²⁹ The six subjects for the 9th grade are the three languages Telugu, Hindi and English, Mathematics, General Science (physics, chemistry & natural science) and Social Studies (geography, history, civics & economics)

An improvement of 10% in one subject leads to one higher grade level for the student in that subject. As we were considering the arithmetic mean of the sum of the subject grades as our object of observation, a student would need to improve in 6 subjects by 10% to reach a result of 10% average improvement.

A rise of 4% in the Experimental Group in this value of arithmetic mean, can be achieved for example by improving one grade-level (10%) in two subjects and 5% in a third subject (or by 10% in natural science as it counted only by 50% in the total grade of the subject).

When we think of our own academic career, or that of our friends and comrades, or that of our children or schoolchildren that are otherwise related to us, we would consider such an achievement in an academic half-year truly remarkable.

Of course, not every student improved by exact 4% their results vary. Some improved more, some less. The individual achievements of each student of the Experimental group are represented in the following figure.

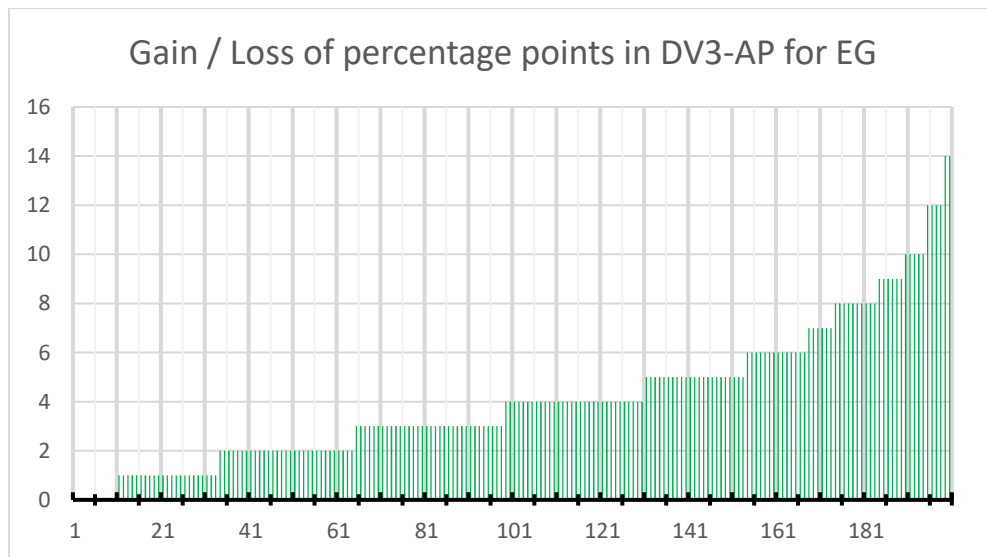


Figure 76: Gain / Loss of percentage points in DV3-AP for EG

The figure 76 shows for the Experimental Group the gain or loss of percentage points for every student in his average academic results. Each bar represents a student, the length of the bar represents the gain in percent, reached in the academic half year.

The graph shows that no student from the Experimental Group had worsened in his academic results in the 2nd academic half year, only 10 remained at the same level, while 190 out of 200 students could improve their learning outcomes. 70 out of 200 (35%) improved by 5% or more. A student could achieve this for example by reaching one grade point higher in three out of six subjects. 11 students out of 200 (5,5%) increased their performance by 10% or higher, that equals e.g., to an increase in all six subjects by one grade point.

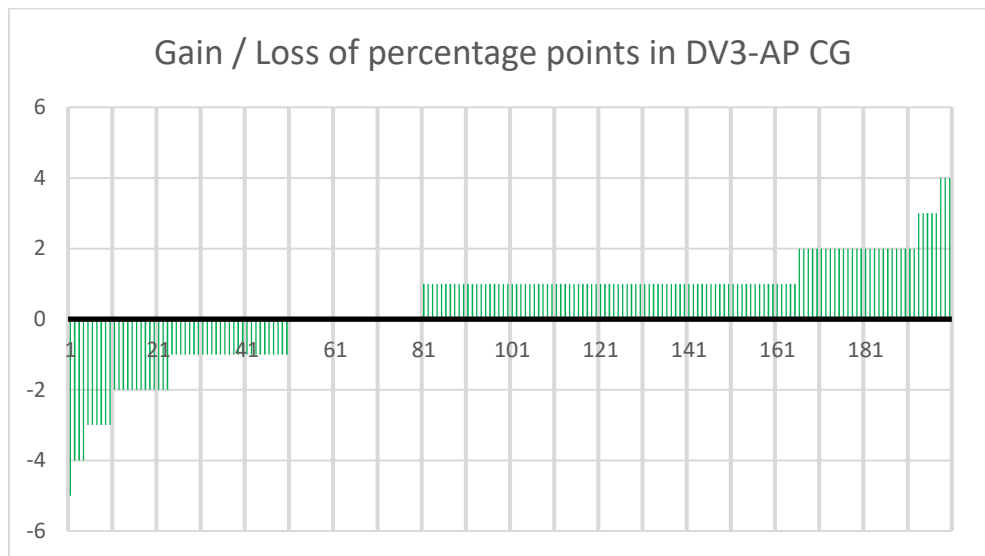


Figure 77: Gain / Loss of percentage points in DV3-AP in the Control Group

The figure 77 shows for the Control Group the gain or loss of percentage points for every student of in his average academic results. Each bar represents a student. The graph shows that 50 students of the CG underperformed in the 2nd academic half year between the loss of -5% and -1%, 30 of the students did not show any difference and 120 students showed a betterment of 1-4% in their average academic results. 35 students out of 200 (17,5%) improved by 2% or more, that could have been reached e.g., by a betterment of 10% or one grade point in one of the six subjects.

As both groups (EG and CG) displayed a higher performance in the post-test, there are at least two thinkable explanations. One explanation could be that some outside effect occurred that was not measured by the setup of this research. Specific events that could

have shown an increase in academic efforts of the students (of ten different schools, spread over the whole district) are not known. The researcher tried to find literature that would indicate a general higher level of grades at the end of the school year compared to the half year – it was not found. Also, from personal experience (10 years of teaching) such a general effect is not known by the researcher. The other way of explanation could come by the social theory of minority influence, which is discussed in the following subchapter.

Robert Rosenthal and Lenore Jacobson (1968) did an experiment in Oak school to show how changes in teacher expectation can produce changes in students' achievements, it became known as the "Pygmalion in the classroom". It is generally agreed, that the younger an organism the greater is the degree of susceptibility to social influence, it is thought to have the high point at an age of 7-9 but to decrease than afterwards. The experiment is understood as a kind of self-fulfilling prophecy that comes true, when the teacher expects a greater intellectual development for a child (because he was told so, that it had a very high IQ in the experiment). Their experiment showed high differences between the experimental group and the control group for the grades 1 and 2 (age 6-8) but no significant difference for the grades 3-6 (age 8-12).

One interpretation of themselves sees reason in the young age (6-8), that

"perhaps it is only the younger children whose performance is affected by the special things the teacher says to them, the special ways in which she says them, the way she looks, postures, and touches the children from whom she expects greater intellectual growth" (Rosenthal and Jacobson, 1968 p. 20).

Two other interpretations are about sampling errors in children's or teacher's sample. The other three possible interpretations suggested by them are about younger children being more malleable, about teacher being more malleable when the children are younger, because they don't know the children so long and thirdly the teachers could just believe that the younger ones are more malleable.

A rather similar experiment by Clifford Pitt (1956) showed no effects. Rosenthal and Jacobs reason

"Pitt's teachers knew their pupils for nearly two months before being given pupils' IQ scores. That was long enough for teachers to have developed realistic expectations of pupils' performance' more powerful than the expectations that could have been induced by adding or deducting IQ points" (Rosenthal and Jacobson, 1968 p. 20).

For a similar experiment by Charles Flowers (1966) they constitute “Flowers' pupils were also older children (seventh graders) and each child had many different teachers rather than just one: Perhaps the effects of teachers' expectations were diluted by being distributed over many teachers” (Rosenthal and Jacobson, 1968 p. 20).

After all the Pygmalion effect may not be so universal Rosenthal and Jacobson admit.

“The same basic experiment conducted at Oak School was repeated in two elementary schools located in a small Midwestern town. [...] No expectancy advantage was found for either boys or girls as measured by total IQ or verbal IQ. For reasoning IQ, however, the results were opposite to those found at Oak School” (Rosenthal and Jacobson, 1968 p. 20).

The following points speak against a “Pygmalion effect” in case of our research. The students were aged 14-16, in the “Pygmalion” studies only the 6–8-year-old showed any effect, while for classes higher there was no effect. Rosenthal and Jacobson argue strongly that the longer knowledge of the students prevents a bias from the teachers, also with regard to the Pitt study supporting these reasoning. In our study the teachers were regular teachers at the schools, they had taught the classes before, therefore there should be no bias. The Academic Performance (DV3-AP) was not in the control of the respected meditation instructors but the grades were given by several other regular teachers of the class.

Comparison of the results with results of another research

Hall did (1999) a half-year meditation experiment on (N=56) undergraduates psychology college students (of African American) at Hampton University, USA. Experimental (EG) and Control Group were given an extra hour of studies the EG did 10 minutes of a simple meditation process (natural breathing techniques, relaxation, and attention-focusing techniques) at the beginning and the end of each session. The students were asked to meditate at home and before the exams. The CG did only the hour of extra studies.

The study analyzed with a one-factor analysis of variance (One way ANOVA), a significant difference between groups, $F = 4.25$, $p < .041$ in the pre-test and significant difference between groups, $F = 6.41$, $p < .014$ in the post-test. They calculated the means of the Academic Performance according to the American Grade Point Average System (GPA).

Table 55. American GPA grading system transformed into percentage values.

GPA Points	Grade	from %	to %
4	A	91.0%	100.0%
3	B	81.0%	90.0%
2	C	71.0%	80.0%
1	D	61.0%	70.0%
0	F	0.0%	60.0%

The table 55 shows the American GPA points transferred into percentage values. This was done to compare the results of the Hall study with the current research results.

Table 56. Pre- and post-test values of the Means of the Hall (1999) study transferred into percentage value

Observation	Mean Score (MS)	Mean Percent (MP)
CG Pre	2.55	75.50%
EG Pre	2.85	78.50%
CG Post	2.48	74.80%
EG Post	2.93	79.30%

The table 56 shows the results of the Hall (1999) study of the mean values of pre- and post-test for EG an CG transferred into percentage values. The Experimental Group showed Mean Score (MS) values of 2.85 (EG Pre) in the pre-test and 2.93 (EG Post) in the post-test. These have been transferred into percentage values for the better comparability with our research. The Experimental Group showed Mean Percent (MP) values of 78.5% (EG Pre) in the pre-test and 79.3% (EG Post) in the post-test. In the analog calculation the Control Group showed Mean Percent (MP) values of 75.5% (EG Pre) in the pre-test and 74.8% (EG Post) in the post-test.

Table 57. Pre- and post-test values of the Means of the Hall (1999) study transferred into percentage value and calculated Change of the Means.

Observation	Mean pre-test	Mean post-test	Change of the Means
EG	78.50	79.30	0.80
CG	75.50	74.80	-0.70

The table 57 shows the results of the Hall (1999) study of the mean values of pre- and post-test for EG and CG transferred into percentage values. The EG showed a significant improvement by 0.8 percentage points, while the CG who only received extra studies (more knowledge) underperformed their pre-test results by 0.7 percentage points.

This underlines the argumentation explained before, that a change of 4.08 percentage point of the Experimental Group doing Sahaja Yoga Meditation can be considered as huge, also compared to the results of other basic meditation practices.

12.6 Gender-wise Study (Male-female) for DV1-EA, DV2-AA and DV3-AP

Analog to the analysis of the covariance (ANCOVA)³³⁰ that was done for the whole sample in the previous chapters (9, 10, 11) it was researched if there exists a significant difference between the results of male and female individuals. As the detailed procedure was shown in the previous chapters here only the main results are presented in short.

³³⁰ The analysis of the covariance (ANCOVA) is a sophisticated statistical method that can compare the outcome of two test groups (EG and CG), by comparing the characteristic key-measure of the two Means and at the same time controlling the predictable influence of the pre-test-results on the post-test outcomes. The error variance is reduced by eliminating the influence of distortion variables/ covariances. Here the pre-test is taken as the covariance. The results of the ANCOVA show the significance of the difference of the results between Experimental and Control Group, meaning if the difference is remarkable high enough to be attributed to the intervention or in case of no significance, if a difference between the Means of EG and CG in the post-test could also have appeared just by chance. The ANCOVA also informs in how far this difference is very unlikely to appear by random chance but in how far it can be completely attributed to the intervention used. The Partial Eta-Square (PESQ) gives the size of the effect, meaning how much of the effect can be explained through the intervention.

Table 58. Adjusted means gender wise for DV1-EA, DV2-AA, DV3-AP of Experimental Group and Control Group

		Adjusted Means	Adjusted Means	
Observation	Gender	post-test EG	post-test CG	Difference
DV1-EA	male	186.90	170.96	15.93
DV1-EA	female	188.52	172.52	16.01
DV2-AA	male	69.18	82.95	-13.76
DV2-AA	female	69.47	83.82	-14.35
DV3-AP	male	75.68	71.66	4.03
DV3-AP	female	73.57	70.22	3.35

The table 58 reveals the gender wise results of the Adjusted Means related to the Experimental Group (EG) and Control Group (CG) after the ANVOVA for the three dependent variables Environmental Attitudes (DV1-EA), Academic Anxiety (DV2-AA) and Academic Performance (DV3-AP).

Table 59. Difference of the Adjusted Means between EG and CG gender wise for DV1-EA, DV2-AA, DV3-AP in absolute values

Observation	male	female
DV1-EA	15.93	16.01
DV2-AA	13.76	14.35
DV3-AP	4.03	3.35

The differences between the Adjusted Means between the two test-groups (EG, CG) are shown in this table 59 for male and females for the three dependent variables DV1-EA, DV2-AA, DV3-AP in absolute values. As the focus here is on the change through the intervention for the inverted scale of DV2-AA the absolute values are taken. As for the Academic Anxiety a lower result is considered to be better for the well-being of the individual, the absolute value was chosen here to maintain the direction of the two other variables, where a higher score value means a positive change for the individual (higher Academic Performance) or the society (higher, more positive attitude towards the environment).

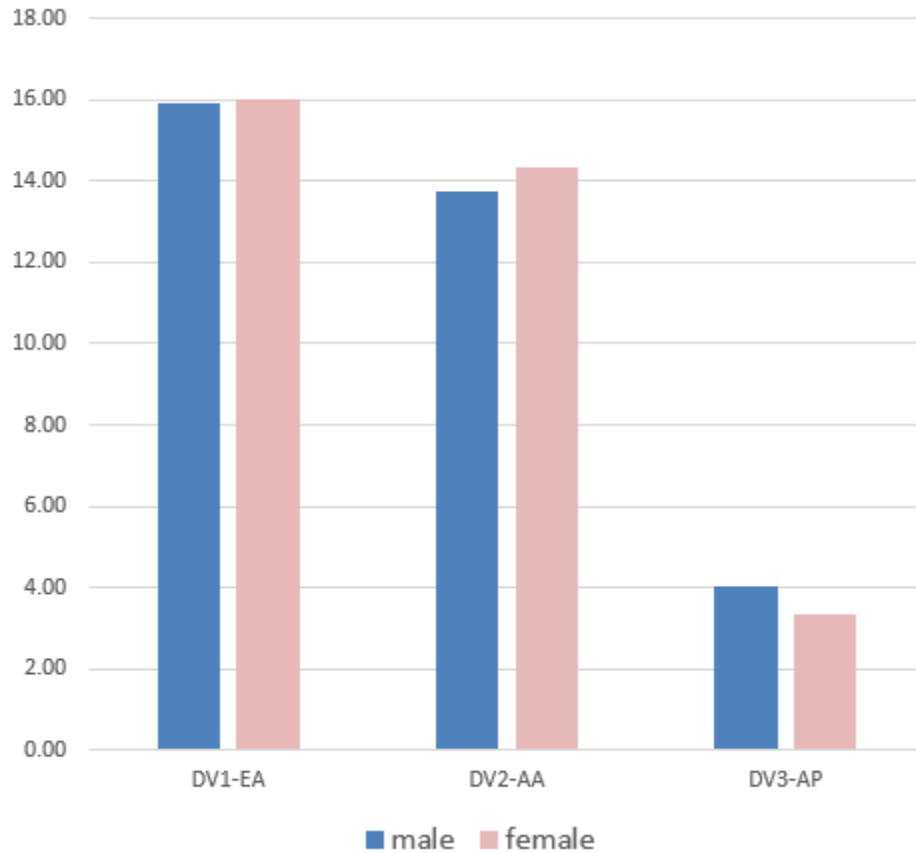


Figure 78: bar chart diagram of differences of the Adjusted Means between EG and CG gender wise for DV1-EA, DV2-AA, DV3-AP in absolute values

The figure 78 shows a bar chart diagram of differences of the Adjusted Means between EG and CG gender wise for DV1-EA, DV2-AA, DV3-AP in absolute values.

The Adjusted Means for the post-tests for all three variables do not show a large difference between male and female. While the effect of the intervention (as shown through ANCOVA) – expressed by the difference between the results of the EG minus that of the CG – is slightly larger for females in DV1-EA and DV2-AA, on the other hand for DV3-AP it is slightly larger for the males. The difference between the genders seems low and is not unidirectional as two times the females perform slightly better and one time the males. Therefore, no other but random variance of the results is considered to be the reason for this small variation between the male and female results.

This impression is also received from the in deeper results of the single test. When we look for example at the results of DV1-EA in a gender wise way of representing the results, no general difference between the male and female performance was found.

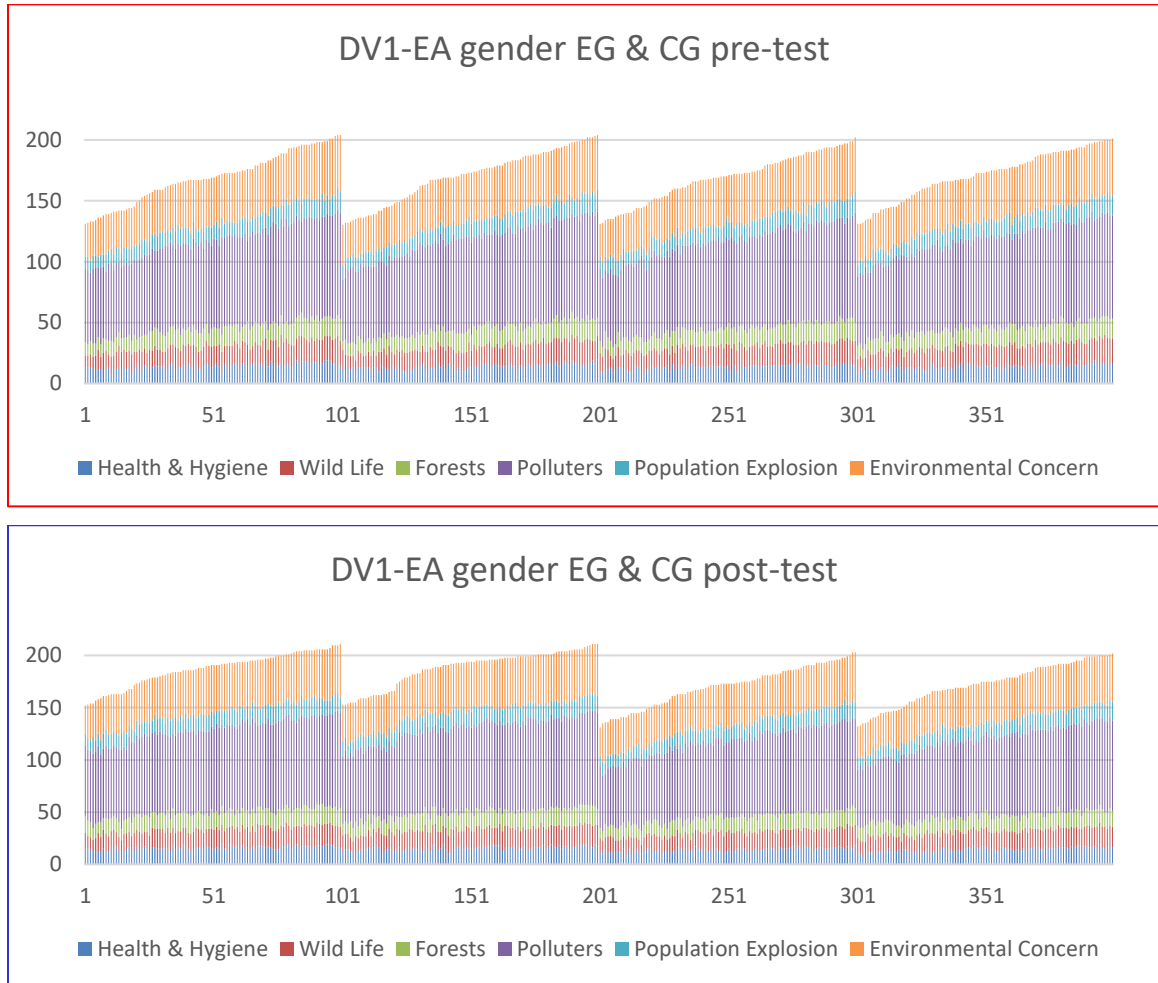


Figure 79: bar chart diagram of DV1-EA score values sorted in ascending order and gender wise for every individual with male EG (1-100), female EG (101-200), male CG (201-300) female CG (301-400), pre-test upper half, post-test lower half.

The figure 79 shows the bar chart diagram of DV1-EA score values sorted in ascending order and gender wise for every individual with male EG (1-100), female EG (101-200), male CG (201-300) female CG (301-400). The pre-test results are presented in the upper half, the post-test results in the lower half.

Each bar represents the results of one individual. The length of the different colors in the bars originate from the score value reached by that individual in the Environmental Attitude Scale in the different subscales Health and Hygiene, Wildlife, Forests, Polluters, Population Explosion, Environmental Concern. The possible maximum score of each subchapter depends on the internal weighting of that subfactor within the scale; it does not necessarily represent a high involvement of the individual with one factor in specific, it is more immanent to the structure of the scale.

The individual results are ordered by group membership of EG (left half) and CG (right half) as well as male (first in the half) and female (second in the half). Also, within these subgroups the test results are ordered in an ascending scale.

12.7 A critical reflection on the quantitative results and “The Hawthorne Effect”

So where do these effects shown above origin from? Is the meditative state the only possible explanation? Critical distance towards the results needs to be maintained. There may be the possibility that just the feeling of being the object of special attention from the experimenter and being chosen as the subject of the experiment can contribute to higher self-esteem. And out of this self-esteem the students may have gotten better in their academic and overall performance. This famous phenomenon is known in industrial and organizational psychology as the Hawthorne effect. Fritz Roethlisberger and William Dickson did a famous experiment at the Cicero's Western Electric factory, the Hawthorne Works, near Chicago from 1924 to 1932. The company asked for a study that connected work productivity with improved working conditions. The most famous part of the experiment was to see if more light leads to more productivity. And it did. But after the experimenters had left, the work productivity did fall again to the 'normal level'. Additional experiments showed that even when the lights were reduced to the level of candle light, also the productivity went up, also, when breaks were cut and the workday was lengthened. Elton Mayo, professor in the Graduate School of Business Administration at

Harvard University is known for the thesis that receiving attention in an experimental situation may cause the effects shown and not the experimental intervention.

Mayo's Hawthorne conclusion that social needs and satisfaction are more important to work conduct (and financial reward is relatively less important) was not confirmed by later experimental studies. H. A. Landsberger of Cornell University, wrote a large critic called *Hawthorne Revisited* in 1958. He considered them to be short-term effects only. Additionally, later, "there have been broad criticism of Mayo's approach and assumption, many of them congenit. They include charges of pro-management bias, clinical bias, and scientific naiveté" (Carey, 1967, p. 403). Despite this still the Hawthorne studies are referred to as a classic in the history of social science in reputable textbooks (Carey, 1967, p. 403).

The Mayo thesis of the Hawthorne effect is considered when the outcomes of an experiment seem to be very surprising. Which is not exactly the case in our experiment. Only if we believe that meditation is nothing more but sitting quiet with hands open and eyes closed and that rest comes from the belief (that may be culturally supported) that this will lead to some kind of positive development – if it is just a placebo, than the results shown would be surprising. But that would also mean neglecting 'the reality' of meditation, the various processes that happen inside of the meditator, that what cannot be named, that what are individual experiences. And it would mean neglecting and denying the ancient meditation scriptures (of many cultures, not only Indian) that can be regarded as manuals and that are describing exactly the outcomes of a multi-dimensional development of virtues and skills, resulting from correct practice.

If just a bit of extra attention would be needed to improve the academic performance, this would be the wonderful solution to many students' problems. In fact, a large amount of extra attention is given to students in private coaching lessons. Even more they are focusing the attention on the student and on a specific subject. Sometimes these extra lessons are fruitful, sometimes not. If fruitful, the causing effect is generally seen in an additional learning unit with extra portions of knowledge, different and more individualized teaching methods, etc... If the lessons remain unfruitful, this is attributed to the capacity of

the student or to bad quality of the extra lessons. But the students received extra attention from the extra teacher and from the parents.

Frank Merret (2006) concludes: "One thing that becomes apparent on reviewing these [Hawthorne] studies is that the effects of interventions introduced into work situations cannot be evaluated simply by looking at outcomes (in this case production levels). It is not only what is done to alter conditions of work but how it is done, by whom, and with what accompanying information, as well as the *perceptions of such changes by those directly affected* [emphasize added] by them, that are important" (Merret, 2006, p. 146).

As Merret suggests to evaluate the effects of the intervention, it is of great importance to get to know the perceptions of the individuals involved. The following chapter deals with the students' practical-experiences during the intervention and their direct responses, collected in diaries. As well as with additional teacher observations as a possible corrective and classifying perspective on the student self-reports and to gain further qualitative information's about the experiment that were not covered by the query of the three dependent variables, which reflect only a small fraction of the possible outcome.

13 Testimonies of students and teachers regarding the effect of meditation

13.1 Testimonies of students

In the beginning of the research, students were informed to maintain a diary regarding their meditation experience. The researcher requested the participants to be honest, sincere, and transparent in their writing. Once in a month, these diaries were controlled and checked by their respective meditation teacher. The teachers gave the necessary guidelines, motivation, and encouragement to the students to write their diaries on regular basis. Occasionally reminder was given to the students, if necessary. The students were made aware of the fact that their feedback will be used to write in the thesis as part of the research analysis.

At the end of the intervention the diaries were collected from the students and handed over to the PhD researcher. During her fieldwork, the PhD researcher requested the students to provide their feedback regarding their experience in this research project. The PhD researcher made a very detailed notes of this feedback. The students also provided a written feedback sheet. Some of the students expressed their views, experiences, and joy directly during their classroom interactions with the PhD researcher.

In addition to that, during the field work, the PhD researcher took the notes directly from the students, teachers, and other administration personnel of the school during her conversations with them. These interactive notes helped in understanding the views and opinions of the students and teachers regarding meditation and its organization in the schools.

Some students stated that they did not enjoy the meditation at first, but later they began to realize that it was helping them find peace or relaxation. But since their overall impression of the meditation and its results were very good, there were no overall negative comments in the diaries and no student commented negatively about the meditation as

such to the teachers. Not every student wrote an entry in the diary every day. The teachers asked them to write down their experiences in the journals if they really had something to say. So, some wrote, according to their capability, just small sentences.

However, some students wrote similar comments multiple times on many days. For example: "I meditated today and felt peaceful." or "I feel relaxed after meditation". It can be interpreted as a mechanical comment with no real experience. Or that is the only feeling they had most of the time and they did not connect anything else with the meditation. It also can be a sign of laziness. As professional teachers, we are used to finding the lazy students who just want to finish their jobs quickly and we have not put these comments here for citation.

Here are the comments that were found to be genuine. They are displayed to show the range of effects achieved by this experiment. It is not a measure of the effectiveness of the intervention. These evaluations were made through the statistical analysis of the three dependent variables. The standard questionnaires used here and, in many cases, elsewhere before, as well as the statistical procedures used, are designed to filter out answers that are to extreme polite or just randomly given without real intention to answer. Such tests are then removed from the bulk, so that they are not included in the assessment. The qualitative statements of the students and the teachers fill the sheer data with live. The significant effectiveness has been proven through statistical analysis. This part is to understand the diversity of its manifestations and to get a feeling for what else was happening besides the three tested variables.

This is a compilation of significant and noteworthy comments, out of the students' diaries.

13.1.1 General outcomes of the SYM course, not related to the observed dependent variables.

13.1.1.1 Regarding meditation classes

Meditation classes were scheduled from 9.15 a.m. to 9.45 a.m. before regular school operations began. Normally meditation classes were conducted in the classrooms or open hall, audio-visual room, school library reading room according to the convenience and capacities of the respective school. Sometimes according to the possibility, feasibility and weather conditions meditation classes has been conducted outside in the open places like terrace, under the trees in the school ground, on the roof terrace on a flat roof, etc... Nearly every student mentioned that meditation classes, which were conducted outside were very pleasant and close to nature. During those classes they could go much faster into the mode of silent meditation.

The students were general very open and honest. Some wrote that in the beginning they were not interested to attend these meditation classes. They always used to think why our class has been chosen for this randomly, why not some other class. They used to feel bored and were not interested in doing meditation. But slowly and gradually they changed their opinion. They could not articulate when and why that happened exactly, but at the end they the meditation class was their favorite class.

Every student gave positive feedback, appreciated the course, and was grateful that their school has been selected for this research project. All participants mentioned that it was their first time attending a meditation course. They found the meditation classes remarkably interesting. There was wide acknowledgement that the meditation proved to be very useful for students.

Some students mentioned that they knew the words yoga and meditation, heard many times but they never practiced or tried to do it. That is why some of them were eager to try. In addition, some students were quite surprised and curious to see whether the meditation helps them to overcome their individual difficulties or challenges. They were

also interested to see the connectedness of meditation with their school life and individual life.

- *I heard about yoga and meditation many times, but I never practiced for myself. Near my cousin's house in Kakinada, I know one uncle who gives Yoga and Meditation classes in their neighborhood. This is first time for me to meditate (Male, 14 yrs., Ambajipeta, School-902).*
- *I like the meditation classes; I am incredibly happy that I am in this class. The other class [the Control Group] did not get any meditation classes, they will do only tests. A friend told me she was very lucky that she doesn't have to come for these classes for six months. She doesn't know what she is missing. Our class is lucky that we are having these classes (Female, 14 yrs., Kesavadasupalem, School-905).*
- *Meditation in the beginning was very boring for me. If I would have had an option to select, I would have never ever chosen myself to be here. In the beginning I always used to think: Why our class? Why not the other class? It took some time to understand that I am totally wrong. Now I am happy that I am here. It helped me to control my aggressive and hyperactive attitude. Now I am playing with many friends, before I used to talk only with my bench mates. Everyone is saying I am not fighting with others like before, then I started realizing myself how the meditation is helping me (Male, 14 yrs., Appanapalli, School-903).*
- *I like the meditation classes, especially the ones outside on the terrace were very nice. Very pleasant and peaceful. I am happy that I am in this chosen group. I asked my teacher why they selected our class to provide the meditation classes, she told they selected randomly. I am very happy and feel lucky to have these classes. In my opinion, whole school should get these classes and all the time. (Female, 14 yrs., Chintalapalli, School-905).*

The author of this work has looked through 200 student diaries. When the diaries were written in Telugu, which many of them were, the entries were translated into English for

reproduction here. Throughout the chapter, these are either representative statements or statements that show the variety of topics addressed by the students. The accompanying text will clarify the respective reasons.

The statements given above are representative. One would expect that some students would express that they didn't like the meditation classes that they were 'forced' into by random choice of their class or that they found it boring. Well, they did, but they said it was only in the beginning and later they liked it, and this was the case for all students.

The critical mind tells us to be suspicious, if there is too much of appreciation – as an individual, as a scientist, as a teacher. Especially when the whole class is giving positive feedback! And when the tenor of appreciation is more or less the same in ten schools – with ten different teachers. If it is too positive, there must be something wrong. Maybe with the teachers, with their instructions or with the methods they use. Are the students telling the teacher what they think the teacher wants to hear? Are the teachers very strict and therefore the students may answer out of fear? Or are they too nice and the students like them too much and don't want to hurt them with answers that they don't like? Or did the teachers' kind of brainwash the students and the students were badly manipulated?

Where does this likeness of the student's appreciation come from? Does this have something to do with the social environment of India? Is everybody in India eager to meditate?

Well, as said, the students were quite frank, they did write in their diaries when they did not like it. The diaries were written daily and the students expressed their feelings about the course very freely and open hearted. We can see this, as in the beginning there were some students who expressed that they wished they were not in that course at all. But they later changed their mind and liked the course. Why should they be honest in the beginning and then lie at the end? Why should other students lie right from the beginning? Are they all (200) not telling the truth? Are they all such good pretenders and who trained them? Can a child spend half a year writing a diary full of lip service, without repeating the same phrases all over again? The diaries were actually full of changing thoughts and gave a good insight into the changing focus and the development of the students.

The social representation of meditation in India has generally more likely a kind of positive connotation, but this does not mean that everybody is practicing meditation or knows what is done in detail. Also, people are aware of fake Gurus that want to exploit people. Some did not get in contact with the kind of meditation practice that they find suiting for them, some think that they are too busy, or think it is too boring, tried but did not like it, meditation is not modern, etc. – the full spectrum is there, also in India. And this is also expressed by the students, by many, the examples given above were representative. Surely the presetting towards meditation is more sympathetically and curious than it would be in a Western country like France, but as the diaries showed, not every student would have opted freely for the course. As it their class was chosen randomly, they had to do it. But this is nothing uncommon in a school environment, they are also not asked if they want to mathematics, English or sports, they have to do it as part of the syllabus.

Are the students certifying just what wants to be heard by the teachers? In India, students (on average) may have still more respect for teachers and the elderly than they do in western schools today, but they are not an army of yes-sayers and teacher favorites – not at all. We reported about the struggle for respect by the government school teachers and their general loss of good reputation, compared to 40-50 years back (in chapter 1.1.2.8).

So, what about the teachers? What role did they play? Did they induce an all-friendly reporting?

13.1.1.2 The meditation teacher as friend and role model

The meditation instructors were regular teachers at the respective schools and taught their normal and different subjects. Some classes of the Experimental Group (EG) had their meditation instructor as a teacher before, some didn't. The teachers chosen for this experiment were, as a private person, familiar with Sahaja Yoga Meditation and experienced in guiding that type of meditation for many years³³¹. They offered to give the

³³¹ Sahaja Yoga Meditation is always free of cost for the practitioners and the trainers or instructors do give the courses voluntary and without money compensation. This is rooted in the philosophy

extra classes in meditation, which meant for them also an extra hour in the school, for free, in their spare time, out of passion – like a teacher who is good in cricket or in playing an instrument may start an extracurricular activity in that for the students. They do this because they like it by themselves, they know how beneficial this type of meditation is, they find it a worthy experience for the students and they like to pass this on. This describes their dedication for the project. They are no fanatics with strange ideologies and they did not receive extra payment for this work, they have not done these meditation classes before, they were asked to do it by the writer of the thesis. Sahaja Yoga Meditation is no strange sect or cult. It is known worldwide and practiced in approx. 95 countries, with a general good reputation in governments and international institutions³³². The District Education Officer (DEO) gave a letter of recommendation to the writer of this thesis in support of this experimental work.

Almost all students wrote in their diary about their meditation teacher. This was not a special requirement, they did it by themselves. Remarkably, though ten different teachers conducted the meditation classes in ten different school, the students liked their meditation teacher and praised them. In one way or other they mentioned that their meditation teacher is 'the best teacher' and a role model, motivation or inspiration for them in following the meditation.

- *My meditation teacher is very good and best teacher. I like his teaching way of meditation. Everyone in the class gets so calm and peaceful. My parents didn't understand about these classes in the beginning, but he explained them about this research project and six months meditation classes, when he took the consent of my parents. I like the meditation classes and my teacher. He helped me to use the meditation techniques to get rid of my stage fear (Female, 14 yrs., Ponnamanda, School-908).*

of Sahaja Yoga Meditation and is practiced like that in more than 95 countries worldwide. So there is no one who does this for his livelihood or as an extra income.

³³² For example, SYM is Partner of UNESCO Center for Peace, read more about SYM in chapter 2.4.

- *My meditation teacher is a role model and inspiration for me. She never got angry, she was never loud or shouted, even when some boys were not following her instructions and disturbing the class in the beginning. She is so patient and kind always with a smile on her face. I want to be strong and nice like her also, I am sure that meditation must be help her to have such a wonderful personality (Male, 14 yrs., Rajahmundry, School-909).*

Again, this may sound like one-sided reporting. But it was the overall case, what can we do? It does not seem likely that all ten teachers would be able to excerpt such pressure on the students to give forced reports, about an extracurricular activity from that the teachers gained not very much on a formal level, no money but extra work, not an official task and no official control or reporting. Could they all be masters of sublime manipulation? Or did they just show passion for the topic of meditation and passion for the children? The later sounds most likely and is what the students reported. So, were all the student's teacher darlings that wanted to please the teacher. So, why shouldn't they like their meditation teacher, as he/ she shows compassion and does with them what they like, at least in the end, if not from the beginning.

The meditation instructors were professional teachers, they know students and the tricks they play, it is part of their everyday live to recognize, if they are honest or just pretending. The students did not just write "I like my teacher best", they wrote why they liked them. This speaks to the sincerity of the feelings expressed by the students. The students wrote that whatever they achieved through meditation is because of their meditation teacher, who has inspired them and dedicatedly given their time and efforts to conduct the meditation classes for them. It was a collective classroom meditation. However, teacher helped and guided every student individually according to their necessity. Every student has own difficulties or challenges, whether they are individual, study related, classroom related or school related; whatever it was, they tried to overcome those things through meditation or they were curious, if the meditation would help them to overcome their challenges, like regular headache, peer related problems, learning difficulties, etc.

13.1.1.3 Regarding the meditation theory

Generally, most of the students had the same expectations about the meditation classes – they had the idea just to sit down for some time and closing their eyes. The majority of the students did not expect that there would be theory and explanation parts. They expressed their appreciation for the theory parts, which included the subtle system of energy centers (chakras), corresponding to the nervous system and nerve plexus, and the – in that part of India well known – philosophy of the five elements³³³ as principles and their involvement in the meditation practice.

- *For me it is so amazing to know about the plexus and energy centers of the body and its connectivity through meditation. I never knew that meditation is itself a big subject to learn (Male, 14 yrs., Nagullanka, School-907).*
- *Initially I thought: Oh my God 45 minutes meditation class for six months! What am I going to do, it will be boring? But the classes surprised me completely even from the very first class. When it is finished, I thought is it over already?? Every day is interesting, new and pleasant with its content and practice. I like them (Male, 14 yrs., Ponnamanda, School-908).*
- *I just thought meditation means just sitting calmly by closing our eyes, but it has a lot of theory behind. I did not imagine. During these classes I have learnt about my body and its subtle system. Since I have started the meditation classes I have got interest in natural science classes. Previously I never liked biology subject, now I came to know its importance (Female, 13 yrs., Adurru, School-901).*

How comes that there is so much appreciation for the theory of meditation, with the chakras, their functions and the five elements? Well, it tells them something about themselves. But biology does that too. It was presented very nicely. Who tells that biology is not presented nicely also? Well, this meditation instructors might be special people with

³³³ Pancha Bhoota, the five elements, earth, water, fire, wind and sky (ether) are understood as principles, not just as the physical manifestation (read more in 3.1.2).

tricks of convincing and manipulation. They were regular teachers, why do their special powers not work in the same way in their regular subjects? It is a completely new subject for the students. Well, so are the topics of biology, and anyway many of them had a general idea about chakras and the elements before, and the fascination of the new lasts normally only a few weeks for students, but not half a year. It is a very easy system of philosophy and very easy to understand! Well, the systems are quite similar in biology and meditation, and both must be explained in age-appropriate language and accuracy³³⁴. Hence, again this cannot make the difference.

What is really different from a biology class, for example, is the direct experience during practice and in the meditation state. Here the 'real', the explanations, meet the 'reality', the direct individual experience, where the students can feel their chakras and the cleansing effect of the elements earth, wind and fire. It could be said that these are all imaginary feelings and just a trick of the mind - if they were and the minds of students were so easily tricked, why not use the same trick to teach biology?

It also could be the case that meditation is a bit more appealing to the Indian culture, which would be a subliminal incitement³³⁵. But not everyone likes tradition; rather, many young people find what is considered modern to be more attractive and what is associated with tradition to be outdated and old-fashioned. The chances would therefore at least be divided that the social context would speak in favor of higher rates of appreciation of meditation theory by the students. In this large sample, randomly chosen there should be both groups present, appreciators of traditional and modern approaches. Hence the effect

³³⁴ Here is a brief outline to show in the necessary brevity the parallels between mediation philosophy and biology: In biology the body is explained as a combination of the nervous system and the blood system. Electrical impulses run in the nerve pathways. The flow is influenced and controlled by different chemicals or hormones. This energy is then concentrated and distributed in the nerve plexuses. The energy then does different jobs. For one thing, the organs have to run. The philosophy of meditation is rather similar and of similar complexity. It deals less with the bodily functions (the hardware) but with the subtler expressions of our personality, like emotions, abilities and character traits (the software). We have three main energy channels, The sun-channel controls our activities, thoughts and plans for the future and the moon-channel controls our emotions and past experiences. The central channel represents the now and has seven energy points (corresponding to the nerve plexus) which control different abilities, for example the throat chakra controls the ability to speak and all the five senses.

³³⁵ But on the contrary, natural sciences are nothing that Indian culture does not appeal to.

of the positive social representation of meditation does not convincingly explain the high rates of appreciation alone.

13.1.1.4 Regarding physical well-being

Many of the students shared how meditation has helped them to feel physically well. For example, headache, breathing problems, sinus problem, constipation, lethargy, etc.,

- *My headache has gone. For the last three months I hardly had any headache. Otherwise, it used to be there at least two times in a week (Female, 14 yrs., Adurru, School-901).*
- *My constipation problem has been reduced. Since I am meditating, I am able to go to the toilet easily, also in the mornings. Before I used to go to toilet during the school hours and I need lot of time in the toilet. My classmates used to tease me or making comments that I am going to the toilet to take rest etc.; also, the teachers had the opinion that I want to skip the class by taking this as an excuse. I used to feel so uncomfortable with that. I didn't know exactly when, but after two months of my meditation classes I have realized and recognized when my classmates were asking me: "Hi Varma, suddenly classes become interesting for you or what? Now a days you are not going to toilet during the classes". Then only I realized, and I observed and tested myself. It is true that meditation helping me with it, and I am very happy. I will never stop meditation (Male, 14 yrs., Adurru, School-901).*
- *Before doing meditation I often used to have headache and tension for small things. After doing meditation they have been reduced and I am feeling peaceful. When I first time did the meditation, I felt lot of vibrations and felt so much freshness (Male, 14 yrs., Ponnamanda, School-908).*
- *I have a headache problem since I was in third class. Doctor prescribed me the glasses. I do not like to wear the glasses, but if I remove the glasses, I used to get the strong headache. During the meditation teacher told us to remove the glasses and close our eyes. I didn't do that, and I told my teacher I have problem if I don't*

wear glasses. She told me I should try, if I am not feeling comfortable then I can wear them immediately, but I should try. Then I removed them first time. Surprising I did not feel any headache. I thought it may be coincidence and I tried next time again and again. After six months now I am not wearing any glasses and I am not having headache. Completely gone. Doctor told me if no pain then no glasses, only necessary to use glasses when I have pain. I am meditating everyday morning and evening (Male, 14 yrs., Rajahmundry, School-909).

- *Today I had a genuinely nice meditation. I can say this because I felt a lot of vibrations. Till evening I felt that joy in me. I feel like I had some special energy. During my meditation I felt some energy going upwards in myself, that time I was not so sure about it. But it is noticeably clear for me that meditation is giving me energy and power (Male, 14 yrs., Mamidikuduru, School-9060).*
- *I have got some breathing problems. It is not asthma, but I have small problem in my lungs. Because of that I have some difficulties with my breathing. When we do the meditation with breathing exercises, I feel good and relaxed. I am able to breathe easily. Every day in the evening I am doing meditation with the breathing exercise, which my meditation teacher taught me last month. I am feeling good with it (Male, 14 yrs., Kesavadasupalem, School-905).*
- *I am a postponement kind of student. I have got a very leisure and lethargic kind of attitude, at home and in the schoolwork. I am also awfully bad at waking up in the morning. Meditation helped to come out of it. Initially my parents thought meditation will make me more lethargic, but surprisingly it made me continually active (Male, 14yrs, Adurru, School-901).*
- *My heart beating has become slow and steady. Before it was amazingly fast, and it used to give me kind of tension for every small situation. But now I am feeling that my heart beating got a proper rhythm and steadiness. I found this by putting my right hand on my heart. This we do sometimes during our meditation. Later I always used this method to check my heartbeat and I found it good (Male, 14yrs, Chinthalapalli, School-904).*

- *I feel very strength and good with the meditation because my health has improved with meditation. Before meditation I often used to have health problems, but now I did not go to doctor since long time. Meditation giving me good strength (Female, 13 yrs., Appanapalli, School-903).*
- *I have a running nose problem. Ten months out of a year I am suffering from cold and running nose, because of that I have a breathing problem also. I cannot go to high places, like hill stations. For the last three months I did not have a cold problem. I also visited Korukonda temple³³⁶ with my family. After climbing fifty steps we took a small pause and I was doing the breathing exercise for a couple of minutes, then we went further. I climbed the entire hill by myself without having any problem. I was so happy to watch everything from top of the hill. I played with my brother, sister and three other children around the temple. Today I am incredibly happy (Female, 14 yrs., Razole, School-910).*
- *Previously I used to have body pains problem. Nowadays I am not having that many pains. It considerably reduced. Many people are smiling at me when I said this, because during meditation I am just sitting and concentrating doing nothing. How did it help me? I told them you should try it when you have body pains, then you will know practically (Female, 14yrs, Chinthalapalli, School-904).*

Here a variety of body problems were addressed by the students. Not every student had body problems or reported about them. The ones that reported about them did so in their meditation diary because they themselves felt a connection between the meditation and the release of their bodily problems. According to the philosophy of meditation, imbalances in the energy system first affect certain energy points (chakras, nerve plexus) and when the imbalances become stronger and become chronic, they begin to manifest themselves in the body as pain and illness. By balancing the inner energy system through meditation,

³³⁶ Korukonda is located at 20km from Rajahmundry. It is an ancient and historical temple, situated in about 120m height having about 615 steps.

the energy blockages are released and the pain or illness goes away³³⁷. The effects of SYM on the body have been the object of various researches, examples are given in chapter 2.4.1. It is not the aim of this work to prove or to question the statements of the students about the bodily effects they experienced.

What is important for this work is that the students had a personal experience that they connected to the practice of meditation and that out of their own experience they felt that reaching the meditative state works and is beneficial to them in many aspects. The philosophy of meditation speaks of a general development which affects imbalance in the mind, emotions and body.

So, the students did not only experience personally a connection with the elements they also experienced a personal health improvement. They connected their experience with the state of meditation. One may doubt that connection and assume that there is no other 'real' explanation than, that the children must have imagined this, as they might have been told by the meditation instructor that this happened because of meditation³³⁸.

Again, this kind of argumentation assumes that there is only the 'real' experience meditation as sitting down with eyes closed and being quiet, all the rest is social conditioning, through the meditation teacher or in our case as we conducted the experiment in India, through the cultural context which is to some degree supportive for that kind of connective association.

Well, the connection between the psyche (or the 'inner system') and the body is a theory that is getting more and more accepted. Health insurances support psychological treatments as well as yoga or 'meditation' courses, in various degrees according to the country and the health insurance, and as a double negation of the same statement, private health insurances in most cases demand risk surcharges if psychological treatment has taken place before the contract is signed, or they even refuse to take out the contract. The

³³⁷ Ayurveda has a similar philosophy about imbalances and illnesses in the body system, their approach is to balance it with special diets.

³³⁸ But probably it was not told to them, because there have been so many different developments, that surely there was no time to discuss them all in the meditation class. In some cases they might have been told this, but surely not in all.

health insurances have got their own large statistics and risk calculations on which they base their decisions. They either pay for treatments when these have proven to be statistically efficient enough, or they calculate their insurance premiums based on the previous illnesses of the applier. In case of a beforehand psychological treatment the insurance companies fear high following costs as they have found in their statistics the likelihood of many other illnesses to be significant higher if there are some problems (imbalances) with the psyche.

A study in *Frontiers of Pharmacology* by Thibault Renoir, Kyoko Hasebe and Laura Gray published 2013 is introduced as follows: “The concept that our mind and our mental processes are influenced by the health of our bodies is intuitively appealing and central to many approaches to health and wellbeing. However, there has been a recent explosion of clinical and physiological evidence to support this theory, shifting a “commonsense” approach to health toward a clinically useful and pharmacologically targetable model³³⁹” (Renoir, Hasabe & Gray, 2013, p. 1). So, the one-way causal connection that the body affects the mind seems to be scientifically established by now and therefore on the causing body element can be worked on pharmaceutically. The scientists of the Psychology are working on the establishment of a one-way causal connection between mind that affects the body and they are also progressing³⁴⁰. In 2006 Richard Balon writes in *Depression and Anxiety*. “There is growing evidence of an overall negative impact of depression and other mood states, and anxiety on numerous physical illnesses and conditions, and their outcome” (Balon, 2006, p. 377). A two-way mutual body-mind connection has therefore also not yet been established, but who would be interested in this, as the medical-pharmacology and psychology are looking for further fields of work for themselves?

³³⁹ The specific study of Thibault Renoir, Kyoko Hasebe and Laura Gray (2013) following that statement refers especially to disorders involving the Hypothalamic-Pituitary-Adrenal axis and the nervous system. Meditation philosophy also claims to affect the nervous system and by that the plexuses, organs and glands.

³⁴⁰ On the connection between stress and the immune system Robert Ader; Nicholas Cohen; David Felten writes 1995 with regards to Psychoneuroimmunology: “The association between stressful life experiences and changes in immune function do not establish a causal link between stress, immune function, and disease. This chain of events has not yet been definitively established. However, major links between these ‘systems’ have been described and a new understanding of interactive biological signalling has begun. Psychoneuroimmunology is developing the means to explore these relations and their clinical and therapeutic implications” (Ader, Cohen & Felten, 1995, p. 102).

Social constructivism supports the idea that the particular way in which the individual understands himself in the larger social and cultural environment is decisive for experiencing illness (amongst other factors) as well as its way of curing the illness (Majer, 2014, p. 22). "If the concept of the person varies cross-culturally, then the goals and methods of therapeutic change must also differ" (Kirmayer, 2007, p. 233). This would speak for a possible application of meditation as a method of curing various illnesses in the Indian cultural context. "Although it is easy to draw analogies between indigenous forms of healing and western psychotherapeutic practices, not all forms of healing are 'psychotherapy'" (Kirmayer, 2007, p. 233). It is important to understand in this context that meditation is not a form of psychotherapy.

Anyway, from the point of view of a developing country like India it would be pragmatic to opt for a method that is working, available for low or no cost, without negative side effects and that is also appealing to the social context. The philosophy of meditation seems to be backed by current research (see 2.4.1), even if the causal effects cannot be clearly traced back to a body-mind, a mind-body, a socially constructed or some other cause. The Government of India is following this practical approach by stimulating further research on meditation (see 1.1.3), although the reasons behind this policy are not understood by everybody or wrongly interpreted many times. If people succeed in avoiding illnesses or curing minor illnesses themselves, that is good for the country and its people, regardless of the cause.

13.1.1.5 Social behavior, social interaction, feedback from third parties

Some students wrote that the meditation helped them to gain social competence. Positive classroom behavior, relationship with peers, positive interactions with one another, trust in friends, getting more friends, etc.; their social-interactions and openness has increased.

Meditation helped the students to improve their emotional regulation. Therefore, they can observe their aggressive behavior or oppositional behavior towards parents, elders and

peer group and hence they could control it. During this six-month period some students could change themselves into positive direction. This has been observed by themselves, by their parents, by their teachers and by their friends.

The change in the student had positive impact on his/her family, school and peers. For example, aggressiveness reduced, friendliness increased, stubbornness has been reduced. All these changes helped the student to be and to become more social in his/her small world.

- *My anger has reduced since I am meditating. If someone in my class or in my school is saying something to me, instead of reacting and fighting with them, I am simply ignoring it, just smiling at them. Taking it easy. I liked this change in me. Because they also stopped commenting on me or being nasty with me. Now I am having more friends because I am hardly fighting with anyone anymore (Male, Ambajipeta, School-902).*
- *Meditation is really helping me. I am finding it helpful because today three children were beating me. But I did not do anything to them, and I didn't fight with them. Miss told in the meditation class "forgiveness is very powerful and has strength". I didn't understand this exactly, but I felt like not to fight back. Later the three came to me by themselves and said sorry. Now they become particularly good friends of mine. I also explained them about meditation. They want to do as well (Male, 14 yrs., Rajahmundry, School-909).*
- *In holidays relatives came to my home. I told my uncle's children about our meditation class and explained a little bit about it. They showed some interest to do meditation and I explained them how to do. Actually, my uncle's son told me he is doing meditation because he saw few changes in me and he believes that meditation could be the reason for that. Whatever it may be, they are doing meditation at their home, I am very happy for that (Male, 14 yrs., Mamidikuduru, School – 906).*

- *I am so thankful to meditation and Miss. I am getting very good remarks these days for my behavior. My parents are very happy with me. It is all because of meditation (Female, 14 yrs., Chintalapalli, School-904).*
- *I have got many things through meditation, really many things. Concentration, humbleness, and peace have improved tremendously in me. I joined in this school last year only. I have difficulties to mingle with others, but now meditation helped me to be friendly with everyone. I have got many friends now. I realized that God is within us only not outside somewhere else, this truth I realized because of meditations. Without meditation I could not have realized it. I learned many things myself with the help of meditation. For example, while making any sculpture craftsman removes all the wastage away, then only the beautiful sculpture remains. In the same way we must remove all the bad things away from us, then we will remain as a good people. This I understood myself because of meditation (Male, 14 yrs., Ponnamanda, School-908).*
- *Before meditation I used to be very angry, also with my friends. But now, my anger has been reduced remarkably. I am interacting with my friends joyfully (Female, 14 yrs., Appanapalli, School-903).*
- *Meditation helped me to be friendly with my classmates. I have difficulties to be free with other students in my class and school. I have requested in my meditation that I want to be friendly with my classmates, amazingly it worked out. (Female, 14 yrs., Adurru, School-901).*
- *With the meditation there is a considerable change in my behavior. I become a humbler and more peaceful person. My meditation teacher is very patient with us. In the beginning some of us were very destructive and loud, but my meditation teacher dealt with us very calm and cool manner, without shouting on us and without giving us any kind of punishment. Other teachers would have reacted completely different. Then I questioned myself, is it because of meditation? Then I started doing meditation sincerely and followed the directions honestly and truly. I*

have experienced the depth of meditation. After my meditations I felt genuinely nice. I did not have any interest to fight with anyone or commenting others just for nothing. My interests and priorities have changed. Meditation helped me to introspect myself and to change myself in a better way (Male, 14 yrs., Rajahmundry, School-909).

- *I feel very protected with meditation. I used to feel very lonely and weak. With the meditation I understood that I am my own strength. Being strong in my mind is more important. We can make our mind strong only with the meditation. I don't know if anything else also exists, but I find meditation is very easy technique, easy to do and follow. After every meditation I feel that I have gained something internally. I feel very protected and fresh with it (Female, 14 yrs., Kesavadasupalem, School-905).*
- *I cannot explain exactly what but there is lot of change in my life with meditation. My teachers are giving me good remarks nowadays and my parents are also happy with me now (Female, 14 yrs., Razole, School-910).*
- *Near my house, my friends, and also my relatives are saying to me, that I have changed in my behavior. Some changes in my behavior appeared. For example, Sunday means fun day for me. I used to watch lot of you tube videos on Sundays, most of them were not useful. Nowadays I have reduced the time with cell phone and whenever I open YouTube I am searching for some informative, knowledge-based videos. I did not recognize that. Also, my anger and aggressiveness has been reduced. I used to shout at my younger brother and sometimes I was nasty with him. Now I am loving and nice to him and I am playing with him. What gave me even more surprise is that the change in my behavior was seen by others. I know that since we started meditating, I changed a bit, but I did not know that it is that much that other people could see it as well. I am happy for that (Male, 14 yrs., Mamidikuduru, School-906).*

- *First, I was not interested in meditation, I thought I will not attend this meditation. But our class was chosen for meditation. Therefore, it was for every one of our classes. I was also sitting in the meditation. Now I am enjoying coming to meditation class (Male, 14 yrs., Appanapalli, School-903).*
- *Today my father told me “Never stop doing meditation”. When I asked him why, he said I become stable and good these days. He observed a change in my behavior. Yes, it is true. I was a bit naughty before. In my street two aunties used to shout at me for my mischievous things. When I am recollecting myself, I realized last couple of months such incidents did not happen anymore. I thought the others had changed, today I am feeling maybe I have changed (Female, 14 yrs., Nagullanka, School-907).*
- *I have got humility and humble behavior. This I realized by myself, and it was also recognized and mentioned by my teachers, parents and relatives. I am quite sure that I have got this nature through the meditation. During my meditations I closed my eyes and sitting calm. This meditation gave me a peaceful mind and pleasantness. May be out of that pleasantness I have got this feeling of humility. I want to continue this meditation all the time (Female, 14 yrs., Razole, School-910).*

Many children described that they lost their anger and aggressiveness and became peaceful. Not only the students gave meditation the credit for this new peace from within. Many statements go beyond self-attestation – also, the parents, neighbors and relatives recognized a change and they also credited it to the meditation.

Explanation 1: The students heard some description about good behavior from the meditation teachers, they liked and appreciated it, because such a good behavior is appreciated within the social context, therefore they started changing accordingly. This scenario seems not very convincing, as surely, the children did hear that good behavior has many advantages and leads to a higher appreciation by others and an easier and happier live, more than a thousand times before, still they just didn't behave proper. So why didn't they start this good behavior before?

Explanation 2: The students heard some description about good behavior from the meditation teachers, they like the meditation teacher very much and they wanted to impress the meditation teacher. This scenario would be more convincing, if the students were showing that kind of behavior only or especially in the presence of the teacher. But this was not the case, it happened when they were together with friends, parents, neighbors or relatives. Some didn't even realize that they had changed, until they were told so. In addition, the meditation teacher was surely not the first person they liked very much, that told them to behave proper. It must have happened before by parents, grandparents, other relatives or neighbors, as good behavior is not only highly valued but also addressed by all the mentioned relationships very frequently, at least in the Indian social context.

Explanation 3: The students showed some random behavior and because they or their families knew that they were meditating, they themselves or other third parties attributed this randomly shown behavior towards the meditation practice. Then they developed a kind of selective awareness which consciously only realized the positive events while unconsciously suppressing the negative events that might have happened also, but that were either not realized or excused by "this is still the old behavior". But would this really happen for all the individual and examples given? Are all the students and their surroundings so naïve and easy to fool? Do they all have such a pro-meditation attitude, that they just want to see it works?

Explanation 4: The students experienced the meditative state, beyond thoughts and this triggered some kind of sublime understanding, some kind of emotions, or even other processes that the individuals didn't even realize. And that made them try out good behavior, sometimes unknowingly. For some other individuals an argument was not only heard and understood, but it seeped into the dimension of values and the students began to act out their new values. For some individuals the good behavior was always there, but the cause that covered the good behavior and led to the display of nasty behavior had gone now. All this processes and more are possible according to meditation philosophy. But this touches the not observable area of 'the reality', of the state of meditation, that cannot be observed scientifically. Therefore this explanation falls in the category of believe.

In the following subchapters present diary observations that refer in a way to the three statistically evaluated dependent variables.

13.1.2 Student Testimonies regarding Environment and Nature (DV1-EA)

Many students mentioned in their diaries that their connectedness with nature and environment had increased through the meditation, because they felt an association with the mother earth, sky, air, water, and the fire element during their meditation. They learnt some techniques to use or please these elements during their meditations.

For example, the students held their hands on Mother Earth or towards the Earth during their meditation and they thank the Earth for providing us with food, water and all other things. In another step, they hold their left hand towards sky by asking to clean their right side³⁴¹.

- *When I keep my right hand on the mother Earth during the meditation, I felt a kind of attraction between mother earth and myself. It gave me kind of special connection with her, later I started thinking about mother earth. For example, what she is giving to us and what we are giving or doing for her. Earth is giving everything for us. I have got lot of respect towards her. This kind of thinking I never had before (Male, 14yrs, Rajahmundry, School-909)*
- *Whenever we try to clear ourselves using the sky element. I feel so pleasant and pure. Before I never put any kind of attention towards the sky, but now I am very conscious with sky, earth and water. Somehow, I realized that they are especially important for our life. Also, the wind. They are existing in the nature, for us, all the time, somehow, I never put my attention on this. But with the meditation whenever I concentrate on earth and sky for my clearance, I have a great respect for them. I*

³⁴¹ See the Appendix for meditation guidelines.

do not want to do anything which hurts the nature (Female, 14yrs, Mamidikuduru, School-906)

- *During the meditations whenever I keep my left hand on the mother earth, I feel a kind of attraction power from mother earth towards me. First, I thought it may be imaginary, but it happened every time and I realized the power of mother earth and the way she is helping us and the entire mankind. I have got great respect for her. Every morning I do now Namaskar³⁴² to mother earth. I am not asking my parents to buy any kind of plastic toys anymore, because plastic is not at all good for mother earth and nature. In fact, I am stopping my parents to buy such stuff and I also told my cousins also not to buy plastic stuff (Male, 14 yrs., Ponnamanda, School-908).*
- *Since we started the meditation classes, I am very much connected with the mother earth because we were praying to mother earth during our meditation. I started thinking of her patience and tolerance. Somehow, I have got lot of respect towards mother earth and when I grew up, I want to do something to reduce the pollution on the mother earth and in all the rivers in India. Water is so important for mankind, plants, and animals. So, we have to be very caring and show concern for the nature. I knew these things before meditation also but after meditation I feel like to do something for that. I am helping in the school to clean the big water tank and volunteering to clean the school ground after the sports. I never did that before heartfully (Female, 14 yrs., Adurru, School-901).*
- *I am planting trees very often. I have got interest in the mother nature. I am planting trees at home and in the school. I am encouraging my cousins to do the same. They are also planting trees now. We are really enjoying it. Meditation gave me this idea and I am incredibly happy to do that. I am also watering the plants regularly. I did not realize the importance of this work, even my mother asked me to do it before. Now I am doing it by myself (Female, 13yrs, Adurru, School-901).*

³⁴² Namskaram is a traditional Indian greeting or gesture of respect, made by bringing the palms together before the face or chest and bowing.

Students expressed their concern for nature and reported a change to an active participation in environment/ related tasks. The sense of interconnection with nature has improved in many students during the project. They gained in self-awareness, self-reflection, and self-control towards nature. Some students become more interested in plantation.

Some of the students became interested in their school environment. They stated that Meditation classes helped them to have more understanding and awareness about the nature and environment, which inspired and motivated them to act. Chintalapalli school students³⁴³ planted trees in their school compound ground. Some students voluntarily took up the water management duties during the lunch hour³⁴⁴. Some students took the initiation to avoid plastic in and around the school. With this initiation school students stopped or reduced using the plastic accessories like pencil boxes, lunch boxes, playing stuff etc.

Is it that the philosophy of the five elements is such a better narrative than conventional environmental education? Is it more effective because it suits better to the Indian mindset? Are the meditation instructors of all 10 schools such convincing teachers, and especially in regard to the nature? What about the convincing qualities when it comes to mathematics, chemistry or spelling? Is the philosophy of the five elements just a simpler message? Are Indian students very gullible? In the sense when you tell them the earth and the wind is your friend, they jump happily, full of joy and sing “yes they are MY friends”? Are the Indian students very easy to manipulate?

We found no evidence to affirm any of the above raised questions in the experiment.

³⁴³ The school principal told meditation students initiated the idea of planting trees and flower plants in the school compound ground. They were the active participants and even motivated the other students in this project. Teachers supported and guided them. Other students participated joyfully.

³⁴⁴ In Kesavadasupalem school meditative students voluntarily take up the duties to avoid the water wastage. During lunch hour all the students come on the similar time to the water taps, which normally leads to a degree of water wastage. A couple of students from the EG took the initiative of monitoring and guiding the use of water in optimal way every day.

Or is it possible that the experience the connectedness with the elements in the meditation technique while using the elements for balancing or cleansing that lead to their belief and interest?

According to many students it was the experience of that connectedness with the elements in the meditative state.

Sahaja Yoga Meditation involves “cleansing”-techniques that “involve” the elements (see Appendix). For example, the earth element balances the first chakra (root chakra), water cleanses the channel (sun-channel, right, Pingala Nadi; moon-channel, left, Ida Nadi and central channel, Sushumna Nadi), fire cleanses the left channel, the air element cleanses in breathing techniques the heart chakra and the sky element cleanse the right channel and the throat chakra, according to the philosophy of Sahaja Yoga Meditation.

These cleansing feelings were not there for all of the students from the very beginning. Some did not follow the instructions that lead to the meditative state or they were distracted, therefore they did not get that experience. Later when they become more sincere, many of them came also into the meditative state and could feel it. Some students didn't feel the “sensations” of relieve, but felt somehow better after the meditation. According to the philosophy of Sahaja Yoga Meditation the ability to feel this sensation is largely influenced by the state of the throat chakra.

During the meditation, students described, that they feel a relieve of tension, relaxation or something heavy going away from them. This experience made them ‘feel’ the power of the ‘elements’ and that there is a possibility to connect to them. Therefore, they were no longer abstract concepts, but something tangible and meaningful for their personal life. Sometimes knowingly, sometimes unknowingly they developed a higher appreciation for the elements and for nature as such.

13.1.3 Student Testimonies regarding Academic Anxiety (DV2-AA)

Some students wrote that they overcome the examination fear. Few students mentioned that it didn't make a difference how good they prepared for their exams, out of fear they forget many things. For such student's meditation helped a lot. They wrote that they used to close their eyes for few a minute or two before writing the exam, then the fear slowly disappeared, and they become confident to write the exam.

- *English and Math's are difficult subjects for me. I am having consistently bad grades in those subjects. But now I am doing good in them, and I have no fear about these subjects (Female, 14 yrs., Chintalapalli, School -904).*
- *Basically, I am a fearful student. I have got lot of fears. But since I am meditating, I do not feel that much fear. Initially I thought it was not true, but now I am noticeably clear that I have no fears and I am now confident (Female, 14yrs, Nagullanka, School-907).*
- *Meditation helped me to get rid of my fears. I have had a lot of fears. I be afraid for exams, fear to talk with teachers, fear to go in front of the class, fear to talk in front of the dais, and I am fearful for heights etc. Meditation helped me to be confident and not be fearful. Especially I felt that I have got some special power or energy when I meditate by putting attention my heart. Later my meditation teacher told me that the energy center at the heart level helps us to be confident and to become fearless. That really made me wonder. I like doing meditation and I want to do it every day (Male, 14 yrs., Ambajipeta, School-902).*
- *Meditation is amazing. Initially I did not believe in it. I find it so funny to sit on the floor by closing eyes. I hardly closed my eyes, often I kept my eyes open. My meditation teacher caught me many times and insisted to close my eyes and said that I will need much lesser efforts to meditate with closed eyes. Initially my attention is only to close my eyes and I did not even know when I really started doing meditation. (Actually, I used to disturb the students who were sitting beside me, now I realized it was wrong. I feel sorry about it.) Meditation helped me to control my bad thoughts, to reduce my fears, to control my bad emotions and to get rid of my complexes (Male, 14 yrs., Appanapalli, School-903).*

- *I wanted to be like two of boys of my school. They are good in the school, and they are sportive. Even after the school they play cricket. Still, they get good marks, and, in the class, they always raise their hands to answer the questions from teachers. I am an average student, not so enthusiastic and not so sportive. In class 7 and 8 I did a lot of efforts and I learned in the early morning hours and in the evening. I was learning and doing things very sportive, but I lost my motivation after the half-yearly examinations in 8th class. Meditation helped me to introspect myself by putting attention on myself. I do not want to be miserable just for nothing. First time I raised my hand and gave the answer in my mathematics class. It was correct and I solved it first. Since then, I become active and self-confident. I am concentrating in the meditation and putting attention to improve my qualities. Now the two boys are my good friends. We are eating our lunch together and I am in their team to play. I like meditation very much (Male, 14 yrs., Rajahmundry, School-909).*

Anxiety and fear are emotional excitements that are sometimes in the head of the person concerned in a concrete causal connection to a source of fear. In the case of Academic Anxiety negative emotions arise from the fear to fail, or not be good enough or not well enough prepared. A small quantity of such fear is regarded as motivating to do more, to learn more, etc., but for many students this kind of emotions are negative stressors, that hinder them in their performance. Each individual has its own ways of dealing with such a situation, some try to learn more, but their ability to learn is blocked by the fear, others cannot learn and this leads to bad results that they expected and in vicious circle their anxiety or fear stays or even increases. No matter what causes the fear, the students did not mention only fear and anxiety with regard to academic assessment situation, the individual feels the urge to avoid such situations, which refers to the flight response system, if the fear/ anxiety level is high this can lead to bodily sensations like sweating or difficulties in breathing, etc...

Psychologic treatment can work on this and even the stress reducing techniques (like MBSR) achieve moderate results in reducing anxiety and stress (Goyal *et al.*, 2014). Methods that are dealing in an “unfocused” manner on these problems show some of their acknowledged results in these areas (e.g., MBSR see above and 2.2.2.1). “Anxiety and

depression are among the most common conditions cited by those seeking treatment with complementary and alternative therapies, such as exercise, meditation, tai chi, qigong, and yoga” (Saeed, Antonacci & Bloch, 2010, p. 981).

According to the philosophy of meditation such emotional imbalances can be reduced or removed by meditation practices. Sahaja Yoga Meditation technique usually does not address single problems, but “works” on the deeper lying sources like the “emotional side”, the Moon-channel or the source of anxiety and fear, a heart-chakra that is out of balance, while a balanced heart-chakra will display self-confidence and bravery. A rational mind is hard to satisfy with this kind of explanation approaches, deeply rooted in meditation philosophy. But it is also not possible to deal with anxiety and fears on a strictly rational level, they cannot be argued away. Although they may be rationally attributed by the individual, they are rooted in feelings of bodily and emotional insecurity and it seems like a way of addressing them is through the three channels mind, body and emotions.

13.1.4 Student Testimonies regarding Academic Performance (DV3-AP)

13.1.4.1 Regarding Academics

Generally, every student does not show the same interest in every subject. They have got their favorites, boring ones, and some of the subjects they face with fear. Some of them be afraid with mathematics, some of them with English. Some students get bored with social sciences and some students not at all interest in science subjects. It is different for every single student. Meditation helped the students to come out of the fear on the specific subjects of that student.

Some students reported that they were doing good in mathematics after meditation, fear of mathematics has gone, they are doing good in it. They are not forgetting the formulas anymore, have a better understanding and problem-solving skills. Now they have got good grades in mathematics.

Many students said that their memory performance increased. In the past, after a few weeks or months, they completely forgot the previous subject matter. Since meditating, some students feel that this has changed. Some students mentioned that through meditation they understood the lessons better than before.

- *I was so irregular with my homework. I hardly completed my homework in any subject, or I used to copy them from my friends in between the school hours. Since I started meditation, I do not feel like copying from anyone else anymore. So, I tried to do it by myself. Many times, I am wrong. However, I feel happy that I did it myself. I am taking help from my friends to understand the concept and then I try to do it by myself. It has been improving consistently for the last few months and my homework assignments are now mostly correct. I realized that these efforts made me learn unknowingly and my marks have increased in the last examinations. Meditation helped me to be honest and sincere (Female, Nagullanka, School-907, 14 yrs.).*
- *My memory power is increasing. I am doing really good in Mathematics, before I was scared of Math's (Female, Adurru, School – 901, 13 yrs.).*
- *My memory power has improved. I am able to remember the things which I have learnt in the school. Before I used to forget everything (Male, 14 yrs., Ambajipeta, School-902,).*
- *My Memory power has increased. I am studying well, interest towards my studies has improved (Female, 13 yrs., Razole, School-910).*
- *Since I have started meditation, I am able to understand the lessons in the classroom better. I am not diverting during the lessons and my interest to learn has increased (Male, 14 yrs., Rajahmundry, School-909)*
- *During meditation when I was clearing my right sympathetic nervous system using the Sky element, I felt like my left hand is like antenna towards Sky. I felt very*

connected with this process. I like the explanations of meditation - what to do, how to do, and why to do etc., All the techniques and reasons explained are particularly good, that created the special interest in us. Because of this sky element I become more interested in physics. Physics become my favorite subject now, before I never liked it (Male, 14 yrs., Nagullanka, School-907).

- *During my meditation I am feeling real gravitation force, which is attracting me and helping me to know myself. I heard and learned about gravitational force in my science classes but experienced it in my meditation classes (Male, 14 yrs., Ambajipeta, School-902).*
- *I have participated in music and dance in the school activities. This is my first time. I am incredibly happy. Actually, I like to do this many times in the last years but somehow, I was too shy and hesitant to do that. Therefore, I have prayed in my meditations to give me the strength and courage to do this, and I have got it (Female, 14 yrs., Chintalapalli, School-904).*
- *Improved scores in examinations - (6 Students: 4-Male, 2-Female, Chintalapalli, School-904,14 yrs.).*
- *I have got lot of positive changes in my life with meditation. For example, my handwriting has completely changed. It is getting everyday better than before. Another example, I am scared of drawing, and I have lot of fear to draw anything because I am very bad at it. My friends and classmates laugh at my drawings because they are bad. Actually, I also never liked them. I used to request others to draw in my drawing book at least for the first four to five pages I made someone else to draw for me. But now I have got the best drawing out of my whole class. It is really a miracle. I did not know that meditation can help me with it, but now I know (Male, 14 yrs., Rajahmundry, school-909).*

Some students wrote about their academic progress made during this time. They improved their class and homework. Attention during class has improved. In a few students there is considerable and notable improvement in cognitive function.

Many students report that they are interested and active in extracurricular activities such as music, dance, drawing, etc. Some students participated in essay writing and speaking competitions held in their schools, which they had never done before.

Reasons that speak against the fact that an 'academic bloom' that was brought about by a self-fulfilling prophecy of the high expectations of a positive change on the part of the meditation teacher can be found in chapter 12.5. None of the circumstances that would speak for a "Pygmalion effect" apply here. On the contrary, the relatively old age of the pupils (14-16) indicates that the pupils do not respond with a higher performance from a possible subliminal higher appreciation by the teacher. The meditation teachers already knew the classes before this experiment and will therefore not be impressed by a meditation experiment in their professional assessment of the students. And in addition, a large part of the grades comes from the corresponding subject teachers who were not involved in the experiment.

13.1.4.2 Regarding concentration and attentiveness

The students wrote concentration and attention of the meditative students has improved noticeably.

- *Meditation gifted me two qualities, which I am lacking all the time, they are concentration and attentiveness. I am able to show more concern and responsibility towards my studies without any instructions from my parents. Actually, my interest towards my studies have improved (Female, 13 yrs., Razole, School-910)*
- *I am able to concentrate since I am meditating. My concentration power has increased in different perspectives. More surprisingly I am able to follow and understand the last period class. Usually, I used to have difficulties regarding concentration. Especially, I never followed last periods, I was very restless and*

uneasy during last periods. One day when I heard the long bell, I felt like "is the school already over and is that the bell to go home". I was so fresh and active and involved in the last lesson so actively that I did not realize the time. That was first time I felt like that all these 9 years of school. I used to look for time hundred times and impatiently waited for the long bell. Then I really believed in meditation and did it more sincerely and more regularly (Male, 14 yrs., Rajahmundry, School-909).

- *With meditation lot of imbalances have gone. During meditation I have asked many times that all my imbalances should go away, maybe that's why I have get rid of them (Female, 14rs, Mamidikuduru, school-906)*
- *Best thing I have got through meditation is my attentiveness towards my studies. I become very attentive and happy with my studies (Male, 14 yrs., Appanapalli, School-903).*
- *Meditation helped me to be active and fresh. I am showing interest in doing things. I did not like to come to the school. Mornings I am very lazy to get up from bed, my parents were not happy with my attitude and laziness. I do the things very slowly. I also took lot of time to complete my lunch or dinner. Somehow, I don't feel like to be lethargy and idle. May be meditation gave me some special energy which made my central nervous system active and energetic (Female, 14 yrs., Chintalapalli, School-904).*
- *My concentration power has been increasing with the meditation. I can concentrate on my studies and also on many other things. Before my attention is very much wandering here and there. Now I am able to concentrate on one thing until I complete that task. For example, completing my homework, drawing natural science figure, ... I used to take hundred breaks, but now I am completing my tasks without many breaks and disturbances. I am doing five minutes meditation by putting my both hands on the mother earth before starting any task, then I can concentrate good (Male, 14 yrs., Kesavadasupalem, School-905).*

- *I become concentrative towards my studies. Initially I have problem with my concentration. Also, some of my health issues come to normal. Now I am a healthy student. Otherwise, I used to miss the school very often because of my sickness. Now I hardly absent to the school and able to come regularly. I am incredibly happy for that (Female, 13 yrs., Adurru, School-901).*

Many students wrote about their experiences of higher attention, concentration and motivation for the respective subjects. The results of their improvement are seen in the analysis of the Academic Performances (see 12.5) where no students worsened and 95% of the students improved between 1% and 14% their personal performance compared to the half year, while only 60% of the Control Group performed between 1% and 4% better, and most of their betterments were only 1%.

13.1.4.3 Regarding discipline and determination

Discipline is one of the most important codes of conduct that is very important for students in any school. Self-discipline comes from determination. It can be developed through the right habits. Some students indicated that meditation helped them become more confident and improve.

- *I came few times late for the meditation class. That gave me a feeling of guilt. Then I tried not to be late and tried to be punctual. That punctuality gave me some kind of confidence. I followed it for everything. Therefore, unknowingly I have developed particularly good self-discipline for everything. That leads me to have a good determination for my studies. After every meditation I feel very relaxed. I really want to continue the meditation for all the time (Male, 14yrs, Kesavadasupalem, School-905).*
- *Today my class teacher told me, she was very surprised and satisfied with my behavior. Because I become very disciplined student in my class. I think it is because of meditation (Male, 14 yrs., Ponnamanda, School-908).*

- *Last few weeks I have been helping my mother in few things, for example, filling the water from public tap, bring vegetables from market, going to supermarket, etc., I saw the happiness in my mother's face. I do not know I did not do this all these years. I always ignored what she was asking me to do. I feel so bad about that, during my meditation when the teacher told us to introspect ourselves and to pray to overcome from the difficulties we are facing. Then I introspected about my behavior, I am happy that I realized my mistakes and I am trying to correct them by myself. I am going to do this all the time (Male, 14 yrs., Mamidikuduru, School-906).*

It seems that during the meditation the students are introspecting. They are trying to examine themselves and observe their actions and rate them as good or bad. With that awareness they want to act positively also in other areas by transferring their new skills.

13.1.4.4 Regarding watching TV and using Cell phone

One of the biggest distractions for students is media usage on cellphones. The cost free-Apps and videos are designed to grab the attention of the users and to keep them online inside the app as long as possible to sell advertising time to their customers. They are very successful with (not only) with the younger generation. This jumping attention keeps them for hours in front of the phone without really doing or achieving something. As a result, some get upset and over-excited. Which in sum is not good for their school work, household work and real live experiences. The Meditation intervention has brought changes also regarding the media usage.

- *I was using my cell phone very much to watch YouTube videos in it, especially movies. But now I am using it to listen music for my meditation and some education related videos. My interest has been changed by itself, previously my parents used to tell me not to watch those movie stuff in cell phone, but it was difficult for me to control myself. I am feeling very good listening to them. It gives me lot of peace and satisfaction (Female, 14 yrs., Appanapalli, School-903).*

- *Before doing meditation, I used to watch television (TV) after completion of my homework. With meditation I have got lot of my changes in my interests. I have observed it myself. I am still watching TV but not too much like before (Female, 13 yrs., Adurru, School-901).*
- *Initially when I started Yoga, I felt extremely uncomfortable. But when doing it, I felt a little bit of comfort. But now it is completely different, I am not recognizing the time when I am sitting in meditation. Time is going on and going on, I do not even feel it. I did not expect that meditation will be so good. Before I used to spend lot of time on watching TV, but now I stopped watching it. I did not stop it purposefully or I didn't plan to stop it. I did not even realize when I stopped watching television. I am feeling so good about it (Male, 14 yrs., Nagullanka, School-907).*

The students shifted their video interests from upsetting agitating input more into the direction of calming and relaxing content or music, many reduced their media time. Again, it is noteworthy that they were not told to do so, but their preferences and their needs changed.

13.1.4.5 Regarding mental and emotional well-being

Every single student who participated in meditation classes reported about their mental well-being through meditation. Everyone wrote that they gained inner peace and relaxation through meditation. Some students felt it from the very first day; some students later and some students took few weeks or couple of months according to their acceptance and attitude towards the meditation.

- *I used to be overwhelmed and anxious to stand in the class or to go in front of staffroom or facing any elder person. Somehow this anxiety and excitement was recognizably reduced. I recognized this only when my classmates told me that they recognized a change in me. Because I was writing something on the blackboard - I never went in front of the class before. Now I am also sitting sometimes in the front row with my friend Jagadish, I also never did this before. I think meditation*

helped me to come across this excitement and anxiety (Male, 14 yrs., Rajahmundry, School-909).

- *I really feeling free of tension and relaxed since I am meditating. Initially I was not sure, if it is really happened with the meditation, but now I am fairly sure that meditation really helping me to be relaxed and tension free. (Female, 13 yrs., Adurru, School-901).*
- *I have problems to fall asleep. Doctors told me that it is not good to deal this problem with tablets at my age. But meditation helped me to sleep without any problem. My parents recognized it and asked me to meditate every night before going to bed. After that I also recognized (Female, 14 yrs., Razole, School-910).*
- *I always used to have bad and crazy thoughts. Even in the beginning days, when I closed my eyes to meditate, I used to get these bad thoughts. Then at some point I opened my eyes when I realized my thoughts, after a while I closed my eyes again. With this process all my crazy thoughts have gone. I did not know exactly when, but now I am not having that kind of stupid thoughts anymore. I am very thankful for the meditation (Male, 14 yrs., Nagullanka, School-907).*
- *I have got a feeling of great enthusiasm and eagerness for meditation classes; this feeling continues through the normal school sessions as well. Therefore, I become very disciplined and enthusiastic in my class (Male, 14 yrs., Mamidikuduru, School-906).*
- *Since I am meditating, I am feeling very relaxed and peaceful. It is really cool. I am very happy that our class has got this opportunity. (Female, 14 yrs., Appanapalli, School-903).*
- *My thought process has been reduced tremendously and recognizably. Before I used to have lot of unnecessary thoughts and bad thoughts. I know they are bad, but I do not know how to get rid of them. Since I started my meditation, I am finding*

that these thoughts have gone, without any effort. (Male, 14yrs, Rajahmundry, School-909).

- *I have got confidence that meditation will help me to set out all my mistakes. I can solve my problems with the help of meditation. (Male, 14 yrs., Mamidikuduru, School-906).*
- *Before meditation I don't have thinking power. With the meditation I have got the power to observe and absorb many things. While meditating I feel like some kind of energy is going inside me and removing all my bad thoughts. (Male, 14 yrs., Ponnamanda, School-908).*
- *I am very happy with my meditation class. I am literally waiting for it. This is my favorite class. Because I am learning new things there and I am feeling particularly good with it. I am feeling very light and happy. Thank you miss for giving us this meditation class (Male, 14 yrs., Chintalapalli, School-904).*
- *I used to be a very disturbed child. I used to feel lot of disturbances, but now I am peaceful with meditation (Male, 14 yrs., Kesavadasupalem, School-905).*
- *I felt particularly good with meditation. Teacher told us to meditate daily and regularly at home. Initially I never took it serious and never meditated at home, but one time I meditated at home only for ten minutes. I really felt good. Then I started continuing meditating at home (Male, 14 yrs., Ambajipeta, School-902).*
- *I am feeling particularly good and happy with meditations. I am comparing the days with meditation and without meditation. There is existing difference between them. I did not skip the meditation purposefully, but sometimes I could not make it. That day I see the difference. First, I thought it could not be, but later it is noticeably clear for me. That is why I want to meditate every day (Male, 14 yrs., Nagullanka, School-907).*

Every individual is different. Students found betterment in different aspects of their mental and emotional well-being through the meditation practice. It may be anxiety for one student, stage fear for some other student. It may be depression for one student and stress for someone else. Whatever it may be, every single student wrote about their progress in their mental and emotional well-being aspects like stress, fear, depression, self-care, self-concept, relaxation, examination fear, reactivity towards people, optimistic attitude, calmness, confidence, etc.

Mental and emotional well-being is not the first thing that comes into the mind when thinking of Academic Performance but in fact they build the base to many successes.

13.2 Testimonies of Teachers

Throughout the field work, we took notes directly from the participants, teachers, and other administration personnel of the school during her conversations with them. These notes helped in understanding the views and opinions of the participants and non-participants, observers and teachers regarding meditation course and its organizations in the schools. For instance, the design and content of the meditation course, their individual opinions about the meditation, their own experience, difficulties in doing meditation, effect of meditation, whether meditation helped them or not, the eagerness, curiosity of non-participant students, observations of the teachers, etc. were noted.

At the outset of the research project, all the teachers individually had been contacted and the project's details to them explained. After getting their consent, teachers approached their principal of their respective schools to discuss the possibilities of organizing the project in their schools. The initial number of schools amounted to thirteen, out of which ten schools agreed to participate and gave their consent. To proceed, official permission was done from the District Education Officer (DEO) of East Godavari District to conduct the research in selected schools without interfering with their school schedule. For reference, an official copy of the DOA consent letter was sent to the principle of participating schools. Additionally, the consent of parents was also taken to allow their children to participate in the research project.

Based on the suggestions of school personnel, the ninth-grade students (age 13-15) were chosen as a suitable target group for the research project, considering factors such as age, activeness, and expressiveness of students. Involving tenth-grade students came out of the question as these students had to prepare for their final exams and could not be part of the research scope. Each class has different sections. From the 9th class of each participating school one section was randomly selected as Experimental Group and one section of students as Control Group.

Following discussions with the entire team representing different schools, the research schedule had been fixed for the academic year June 2018 - December 2018. The Experimental Group participated in meditation classes for six months, starting from July 2018 - January 2019. Before the start of the meditation classes, a pre-test was conducted in June 2018, the post-test was done in January 2019 at the end of the project. Both tests were done with both groups (Experimental and Control Group). During the intervention period the EG was given every day a 45-minute session of meditation course, including meditation theory and practical meditation. The Control Group did no extra activity related to the research in between the pre- and post-test.

Also, for the involved teacher and meditation instructor team two big sessions were made, one in the beginning, one at the end of the project. During the research phase the communication was organized through a communication platform. A group on WhatsApp was created to ensure easy, seamless, and accessible correspondence throughout the project. Such a digital platform helped the researcher and the team to organize the research uniformly across all ten selected schools. Instructions, guidelines, doubts, clarifications, photos, and other materials regarding meditation classes or the research could be effectively exchanged among the PhD researcher and the research team throughout the project. The meditation trainer team consisted out of teachers, principals and one volunteer. The information from the teachers was collected by communicating, discussing, and interacting with participants and noting their feedback regularly.

During the field trips, the PhD researcher also interacted with other teachers, who were not involved in the project, and took the feedback, opinions, and observations.

13.2.1 Description of the project and feedback organization with the teachers

An interaction has been activated with round 90 teachers from ten different schools during her field trips. Around 25 teachers were experienced in meditation. The rest and majority of the teachers are non-meditative teachers. Ten teachers gave the meditation classes in ten selected schools.

The quasi-experimental approach is at the same time an action research approach with teachers' participation, feedback circles and changes (see in more detail in 4.2.3). Most of the teachers at the outset of the research project were pleased to see their schools participating in this research that focuses on yoga and meditation. Based on Indian traditional, cultural knowledge of yoga and meditation, all the teachers knew the importance of meditation. They expressed their opinion that meditation shows positive effects on many mental and psychological parameters. Some teachers agreed on mediation to be beneficial but felt uncertain about organizing meditation classes over six months. The challenge they felt was that mediation would be perceived by students as dull, indicating the difficulty to motivate the students for six months. This, in turn, could lead to discipline issues.

However, most teachers were up for the challenge and were intrigued to observe the research project and its progress. They believed that meditation would help the students, and they may see some effect of it. However, some teachers were uncertain whether it is possible to measure it correctly with the questionnaires. Almost all the teachers were assured that the variables Academic Anxiety (DV2-AA) and Academic Performance (DV3-AP) could probably show some change in the students. Some of the teachers raised their doubts and uncertainty to find out the effect of meditation on Environmental Attitude (DV1-EA). Initially, they raised some interrogative discussions on this variable and finally agreed that they are curious to see the research results, especially related to this variable.

The responsible ten teachers who gave the meditation classes observed their students. During the intervention period they made notes on their observations and remarks on any

change in the students who meditated. But, also other teachers, not directly part of the research project, observed students and compared those who meditated with those who did not meditate. Their observations were reported for this PhD research as well.

At the end of the intervention session, a large feedback session was held at each school to summon up the impressions of the participating meditation teacher and the other teachers of the particular school that had the participating students in their classes.

The general feedback given was positive and the teachers were impressed by the effects shown through the meditation sessions on their students. They appreciated the project and pointed out that the students had developed very well in quite different aspects. There was not a unit-directional effect, e.g., all students did improve in this one aspect in the same manner, also the effects were not restricted on the three tested dependent variables. It seemed like every student somehow had been working on overcoming his most dominant deficit areas with observable results. The teachers, and especially the teachers that were not the trainer, were impressed by the remarkable personal and collective (on class and school-level) changes, that they had observed during the meditation project in their school. In addition, they had received positive feedback from the students' parents who expressed their appreciation of the project.

Almost every teacher mentioned that students are alert and active in the last lesson of the day, just as when they have their first day's lesson. "Their attentiveness and activeness are quite remarkable". They found the change is different from individual to individual according to their personalities and problems.

For the evaluation of the feedback the researcher collected information and organized relevant data based on words, phrases, and sentences. The data was categorized, based on themes that were relevant to the research. The following subchapters will address the different categories of the observed changes.

13.2.2 Connectedness with Nature - A growing Environmental Attitude (DV1-EA)

At the end of the research, teachers shared their observations related to environmental issues with the PhD researcher during the fieldwork. They found individual as well as collective changes.

On a collective level, it was observed by the teachers that meditative students actively participated and wholeheartedly involved in or even initiated school environmental projects like a school garden, developing greenery in our areas, planting trees, sramadaanam³⁴⁵ and drinking-water maintenance duties.

Teachers from the Kesavadasupalem school shared that their school is located near the sea. The school ground consists mainly of sand, and students initiated a project for reducing plastic waste in school surroundings. Students maintained the school ground clean and green as they wanted to optimally use the grounds for outdoor activities. Meditating students were the main initiators and active participants of the project and were the ones to motivate the rest of the students to tackle plastic waste. They convinced students during a school assembly of the importance of mother earth and the environment and the individuals' responsibility to take care of it. Also, at Kesavadasupalem a safe-drinking-water program for the refectory during the lunch hours was initiated by the EG students.

In Chintalapalli students also initiated a waste-collection- and green-the-school-project, where they planted trees and plants to have a nice environment to play in during their breaks.

On an individual level, a Nagullanka school teacher observed that the essay writing competition on "Our Environment" was conducted for the students in their school. He was the in-charge of this competition and stated that students participating in the meditation

³⁴⁵ Sramadaanam is a service-oriented program to bring the awareness about work and service among students. In Indian language, "Srama" means work "daanam" means donation/service.

classes were more expressive and showed clarity of thought in their essays. Later, when he discussed with the students, many students shared their experiences with meditation and how the meditation sessions helped them become conscious about the five elements and nature. Teachers from Mamidikuduru school mentioned that most of their students in meditation classes had a significant change in their behavior and qualities. The students told them that they felt their connection with the elements, with mother earth, sky, water, and the air, during their meditation classes.

The teachers who expressed their doubts in the beginning of the project regarding the relatedness of meditation and environmental aspects were quite astonished about the results they had witnessed and told that they would have never expected it to turn out that way. They were impressed and pleased by the way it had turned out.

13.2.3 Confidence gains through SYM (DV2-AA) – teacher observations regarding exams-, studies- and stage-fear

Some teachers observed students they knew to have stage fear, to overcome their stage fright during the meditation project. This was obvious especially with girls, who are usually very shy and calm³⁴⁶. Not only in the classes the improved confidence of the students got visible. Some girls, participated in the elocution/debate competitions conducted by the schools on Independence Day celebrations. Here they had to speak in front of the whole school. The teachers were surprised, because the girls had never participated in such competitions before, and the teacher tried to motivate them to do so since the last three years. The girls said that they had this meditation classes and that the meditation had helped them to be confident. This happened only around 5 to 6 weeks after the meditation classes had started in July 2018, the Independence Day is on the 15th of August. The teacher said that later these girls had become even more confident and active.

³⁴⁶ In rural areas of India, still girls are very shy to speak openly in front of the people. Nobody stopped or discouraged them, but it is just out of their own stage fear or shyness. Generally, girls in rural areas hardly participate in elocution or debate competitions conducted in the schools. In the big metropolitan cities, the scenario is different as girls and boys compete equally there.

Another sign to literally read the confidence gain was the handwriting of some students. Teachers observed that some students improved their writing skills, as they checked their written homework. Before it had been tough for the teachers to read their notes and written work³⁴⁷. Reasons given later for their bad handwriting before was that they had rushed to finish their assignments. Some said that they were afraid of their homework and that they rather want to avoid them. The teacher gave the following reasons for the improved handwriting skills after the meditation classes. Higher concentration and attentiveness were cited as the reasons, as also the quality of the homework had improved and not only the handwriting. Better motorial skills, as the drawing qualities also improved. Also, they saw a growing confidence of the students to be the reason behind the better handwriting.

Teachers also revealed that they observed a change of behavior in the examinations. It is usual for every class to have a few students who be afraid or anxiety regarding examinations. Although such students study diligently, they cannot access what they have learned during exams. Exam anxiety can arise from focusing on the result instead of focusing on the exam itself or from worrying about all that they could not cover, instead of focusing on and writing the answers to what they did learn. During the project, some students were able to overcome their fear and became greatly confident in their examinations. After getting the question paper, they closed their eyes for a while, took a deep breath, kept themselves quiet for a while. Then they started writing the exam. Teachers observed that they were relaxed throughout the entire examination. This new balance paid out for the students in better exam results.

13.2.4 Capabilities – Academic improvements (DV3-AP) – recognitions of the teachers

³⁴⁷ An Adurru school teacher mentioned that Sravani's handwriting significantly improved. The student's handwriting was very messy, illegible and difficult to read, even for herself. However, meditation improved her motor skills, improving her handwriting. Additionally, in Appanapalli school, Vasavi and Aruna Sridevi also acquired good handwriting skills with the help of meditation.

Teachers shared that some of the students showed gradual, consistent and remarkable improvement in their academics. Initially, they were surprised with this change, but later, they believed that meditation brought some positive transformation in those students. Because they knew the students from the previous year, showing no signs of change before, they have observed with the meditation classes considerable and extraordinary changes in few students during these six months. Such changes were not present in other classes by comparing them with students participating in meditation classes.

Some teachers had special cases where they found the change extremely remarkable. Students who were very calm, shy or displayed a lazy attitude became open and active. For example, two female students (age 14 yrs., from Razole, School-910) started showing interest in their studies after attending the meditation classes. They became attentive in the class and showed more active. They took initiative to participate in classroom discussions and school activities without any external push. Furthermore, very hectic, energetic, aggressive, and disobedient students become calm, restful, and reflective.

Mathematics teachers observed how some students had lost their fear of learning mathematics during the project. Even capable and good students had before fear of mathematics which made them do mistakes and discouraged them. Once they come out of this fear, they could perform well. Therefore, they were motivated to learn more about mathematics and deepen their interest in this subject. They are regular and sincere with their mathematics homework compared to when they were known for plagiarizing their work from their friends. Now they are independently doing their homework with increased levels of confidence.

Additionally, some students showed tremendous improvement in their drawing skills. Students have to draw for science subjects, particularly in the natural sciences. A couple of science teachers pointed out that they had observed students who were not so good in drawing previously improved their drawing skills during the project. For example, two students who were extremely poor at biology diagrams improved their drawing skills astonishingly. They said that meditation helped them to be confident and concentrative to draw the diagrams.

Some students who had problems with spellings, grammar and reading texts overcame their difficulties in the English class.

The teachers explained the enhancement of the students' academic performance as follows: According to the teachers' opinion, meditation may have helped students to become more relaxed and peaceful; a state without much tension or worry. This pleasant state enabled them to be more concentrative and attentive in their work. Therefore, they could do their tasks better than previously.

13.2.5 Social Change through Community engagement for– Participation in extra-curricular activities of meditation students increased.

Extracurricular or co-curricular activities help the students to learn new skills and play a crucial role in the overall development of students. They enable broader social skills, improve the time management skills and lead to an increase in academic performance. Therefore, Teachers initiate and operate extra-curricular activities, if it suits in the curriculum and time allows, because it usually means an extra amount of work for them. Usually some students participate willingly, while some students show no interest in extracurricular activities.

The research project showed that meditation did not only help such students to find joy and passion in their extracurricular activities. In some cases, they even initiated these extracurricular activities. As written before students initiated a waste-collection- (Kesavadasupalem, Chintalapalli) and green-the-school-project (Chintalapalli) and a safe-drinking-water program for the refectory during the lunch hours (Kesavadasupalem).

The students became more interested in doing things collectively with others. For example, three male students and one female students of age 14 yrs. from Adurru school and one female students of age 14 yrs. from Chintalapalli school become active in playing games. These students became more open and dynamic; they happily went to the ground to engage with other students. Before, they used to sit in the classroom alone even when

the whole class played on the ground. Consistently they used to give the reasons like stomach pain, headache, etc., for not attending the sports class.

Every school conduct competition in co-curricular activities such as essay writing, elocution, drawing, dance, and many more events on an inter and intra school level. For the academic year 2018-2019, most of the prizes were won by students who had participated in the meditation sessions. The schoolteachers attributed this to the meditation and said that meditation helped the students in a multitude of perspectives.

13.2.6 Improved in-class behavior of the students after SYM supports the quality and effectiveness of teaching.

A big point that was mentioned by all teachers of all ten schools that participated, was that they observed the students as balanced, peaceful and with pleasant behavior in the classes after the meditation sessions. This change was found very remarkable and was observed since the very beginning of the meditation sessions. This development not only continued but also improved consistently till the end of the meditation sessions. The teachers reported in the back sight that they found a continuous development in the students towards a relaxed and calm class; this was especially visible with those students that were known among the teachers for their aggressive and restless behaviors before. Gradually, teachers felt that it was no longer necessary to put their efforts into class-control and maintenance of students' discipline which was extremely helpful for their teachings.

At the beginning of the project all teachers at the schools were asked to exert regularly in all classes the "Two Minutes Discipline Technique". This should help to measure the difference between the other classes of the school and the Experimental Group which was doing SYM. The technique goes as follows: When the students are noisy, over-active and talkative in the classroom, the teacher instructs the students: "Now I give everybody two minutes everybody to become quiet and calm down".

This is a good teacher working technique to control the students and to bring back discipline into the class. Not every teacher knew this technique before, but they appreciated and applied it in their regular classes with all students.

In general, it took the teachers more than two minutes to calm their classes by this method, of course there are variations, according to the class and the teacher, but in many cases, it worked, but took longer than two minutes. During the project time the teachers got familiar with this technique, and they observed how the classes responded to their instructions and compared it to the Experimental Group. During the project they found out that the Experimental Group calmed down more quickly than any other class. Initially they needed also more than two minutes, but gradually it went down and at the end of the project all the teachers hardly needed one minute for calming the Experimental Group, while it still took recognizably longer than two minutes in other classes or didn't work out there properly at all.

Also, the teachers found the Experimental Group to be generally more relaxed and fresher in all their classes. They said they could see the difference immediately when they entered this Experimental Group for their regular classes. The calmness and attentiveness of the EG helped them in their teaching. The meditation sessions showed a significant considerable impact in six months. Being peaceful helped students be more attentive and calmer in the classroom and allowed them to learn in a classroom with a quality atmosphere. This feedback was given unanimously from all the teachers in all the schools.

A couple of students become very punctual and interested in school because of meditation. They liked the meditation classes, and the meditation class starts before school hours and therefore, they used to come on time. A teacher from Adurru school expressed how Annapurna became very punctual and active after attending the meditation classes. Usually, some students had a problem with their punctuality. Parents mentioned that they were not so interested in the school and studies; some parents highlighted the difficulties to wake them up in the morning. After the students started with meditation the parents reported a surprisingly betterment in these points. Later the students become active and interested in their studies and other school activities as well.

13.2.7 Peace within and in the class - Collectiveness and friendliness among students increased after aggressiveness and quarrelsome attitude of students vanished.

Many teachers observed that a couple of (before) aggressive students tremendously changed their aggressive nature and calmed down to almost normal. This point was mentioned in every school. Some students in every class are problematic with discipline issues, showing in the classroom and in school. For teachers, such students prove to be challenging to deal with and discipline. It is more the boys who show rude behavior, some constantly fight with others, especially on the school ground. But girls can be also difficult in their behavior.

During the beginning of meditation classes, these students did not pay any attention and did not follow any instructions. They were reluctant to close their eyes during the meditation and questioned their teachers why their class was selected and others not. The teachers suggested to students to focus their attention within instead of outside. This instruction helped all the students to follow the meditation process and ignore any distraction from other students disturbing the meditation. After four to five weeks, the teachers observed a gradual positive change amongst problematic students as they started meditating and were following the teachers' instructions³⁴⁸.

After these students engaged more and more in mediation their behavior with other students and elders altered. A teacher from Chintalapalli school observed two female students of age 14 yrs. These students become calm and the quarrelling, fighting, and

³⁴⁸ These points are also found in the students' diaries. They wrote about their change in their aggressive nature. Initially these students very unsatisfied that they had to do meditation and showed no interested in the meditation classes. Later they said they really enjoyed meditation, they also observed their new, less aggressive behavior and were happy that they gained many friends by being nice instead of fighting.

arguing with other students reduced very much. Apart from their improved behavior their academic performance also improved.

Ponnamanda schoolteachers mentioned that some of the parents remarked about the change they have observed in their children after they started meditation. Waking them up in the morning was usually a difficult task. However, their children wake up by themselves in the morning to meditate and teach their siblings about meditation. Also, these meditations helped maintain better family relationships - less likelihood of quarrels than before, leading to friendlier and affectionate dealings with one another.

In a couple of months, problematic students started interacting better with other students as observed in the school ground. They become friendlier with other students, not only with a selected student group. The quarrels amongst students that took place earlier also reduced significantly. For example, female student from Chintalapalli school-904 showed a considerable change in her attitude as anger and carelessness reduced.

The teachers unanimously said that meditation helped the students to change. They found changes on an individual level as well as on a collective level. In Rajahmundry school, teachers claimed that those students, who have participated in the meditation classes, improved their sense of collectivity. This class was usually behind and not active in competitions³⁴⁹ conducted in the school. They have seen a considerable change in this particular class as students became more sportive, collective and showed higher teamwork levels.

13.2.8 General assessment of the SYM by the teachers (meditation trainers and others)

The entire team of teachers from all ten schools unanimously spoke out that the designed program of six months of Sahaja Yoga Meditation for students positively impacted

³⁴⁹ It is common in India to have some school projects as a competition between the classes. The challenges are assigned to the different classes. The results are compared and evaluated class wise among all classes in the school. The winning classes are announced in the school assembly.

students. From their point of view, meditation is an important task which should be offered regularly in schools. In this project with SYM the students benefited from meditation in various aspects related to individual weaknesses and strengths. Meditation helped the students to achieve better academic performance, set many other qualities in their individual lives free and helped them to find creative ways to implement them (e.g., like making new friends). They said these positive outcomes resemble the outcomes of yoga and meditation they knew to be described of the traditional Indian educational system.

The teachers valued the transformational aspects of the project. Although only one section of ninth-grade students did attend the meditation classes, this small group of students influenced the other students at the school. Within the peer group, students themselves observed the small considerable changes in a couple of students behavior or attitude in the class or the school. Therefore, they wanted to try meditation for themselves. In general, students became curious and eager about meditation. Teachers mentioned how other students that were not participating in meditation classes asked them when it would be their turn to have meditation classes. The positive response from the other students and their request for the meditation classes were the main driver to promote meditation sessions now for the entire school.

The participating teachers expressed their wish to continue the meditation classes and to expand them on all the students. This wish to include meditation as part of the school curriculum was also expressed by the other teachers at the schools. At least fifteen to thirty minutes per day should be given for meditations, for example, during or after school assemblies. Other teachers expressed that a couple of school hours could be allocated for meditation, or it could be included in the sports schedule. The appreciation for school meditation shows how receptive teachers are towards yoga and meditation. All of them supported and wished to include yoga and meditation as part of the school curriculum. If this were the case, every student would have the opportunity to benefit from it directly. Some schools already discussed with the school administration to conduct the meditation classes at least 15 minutes before the official school hour starts.

14 The social influence of the Experimental Group on the school measured through the Control Group

Changes through interventions on the Experimental Group are previously expected results. Within this study additional changes were found in the Control Group that was not exposed to an extra intervention. The changes in the Control Group were around 10% (DV1-EA and DV3-AP) and 20% (DV2-AA) of the changes that occurred in the Experimental Group. It is claimed that these changes were secondary results of the intervention. In this chapter first the legitimacy of that claim will be shown statistically. The chapters with the testimonies of students and teachers will substantiate this claim further. Then an explanation approach is undertaken considering different theories of social change and social influence.

The previous examinations for each scale (DV1-EA, DV2-AA, DV3-AP) showed that both groups are normally distributed. This supports the assumption that our sample and each of the groups represent the population. The pre-test means of the Experimental Group and the Control Group are also remarkably similar. This means in combination with the previous assumption, when we measure a significant change in the means of our tested variables, this should be due to the intervention, because only our sample was given the intervention with Sahaja Yoga Meditation, not the whole population.

The exact percentage values that can be statistically explained by our research are given through the Partial Eta squared value (PESQ), resulting from the ANCOVA examinations. We take here the statistical values of DV3-AP as example for the explanation, the derivation for DV1-EA and DV2-AA would be analog.

Table 60. Partial Eta squared value PESQ Analysis of co-variance (ANCOVA) to compare the adjusted means of EG and CG for the DV3-AP data of both genders together.

Source of variation	Sum of Squares (SS)	Degree of freedom (df)	Mean Square	Value of F	Significance Value (SV) / p-value	Partial Eta-Square (PESQ)
Value of Contrast (between groups)	1361.32	1	1361.32	351.97	0.000	0.470
Value of Error (within groups)	1535.47	397	3.87			

The table 62 reveals the results of the analysis of covariance (ANCOVA), to compare the adjusted means of the Experimental Group (EG) and Control Group (CG). The value of F (351.97) is found significant³⁵⁰, because $p < 0.05$. This proves that there exists a significance difference between the adjusted means of the Experimental Group (EG) and the Control Group (CG) and a significant effect of Sahaja Yoga Meditation (SYM) on the Learning Outcomes was found in this research. In large sample sizes even small differences in the means of two groups (EG and CG) can be found statistically significant. To find out whether the effect size is small, medium or large, statistical rule of thumbs like given by Cohen are common practice. The PESQ-partial eta-square value (R^2) indicates how much variance in the dependent variable is explained as a percentage by the independent variable. According to Cohen (1988), the limits for the size of the effect are .01 (small effect), .06 (medium effect) and .14 (large effect). The partial eta-square value (PESQ) for DV3-AP is of 0.47 and can therefore be considered exceptionally large.

A change due to the intervention is quite logical and common for the Experimental Group (EG), but in our research a significant change is also found due to the intervention for the Control Group (CG). A possible explanation for the significant changes in the Control Group is the interaction between the students of the EG and with the students from the CG at the same school. The betterment of the EG must have also affected the CG.

³⁵⁰ F is the between-group variance divided by within-groups variance. If the computed p-value is small, then significant then the significant relationships exist.

In case of the Academic Performance (DV3-AP) the effect on the Control Group (0.39%) was approximately 10% of the effect-size of the meditating Experimental Group (4.08%). The change in the Environmental Attitudes showed a similar ratio of approx. 10:1 for EG (10.81%) to CG (0.98%). Regarding the lowering of the academic anxiety level (DV2-AA), the CG (-4.60%) showed around 20% of the effect of the EG (-24.18%).

Hence, the results from the quantitative research substantiate the experience of the teachers, that the intervention with Sahaja Yoga Meditation had an overall positive effect on the whole school. The effect on the individuals without the intervention is very unlikely (0.01) to be explainable by random changes of a group. The sample size was big enough, so that normal variations of subjects within a group would be equalized by variations of other subjects in the opposite direction. This is supported by the similarity of the means of the pre-tests and the normality of the two samples. Regarding the researched variables, it was also possible to quantify the experience of a general improvement of the whole school (through our CG).

The sociological theory has models intended to explain how changes in small groups (minorities) can affect the majority, for example the theory of minority influence by Moscovici. In our experiment, the experimental group with about 20 students per school influenced the entire school with about 400-600 students. The effect was measured in a representative sample of this school, our control group (also of about 20 students) and found to be significant. The effects did not occur once, but ten times in a similar manner in ten different schools, with different teachers and different students. The significant effects investigated are attributable to Sahaja Yoga meditation and are likely (99%) to reappear in a similar way if an intervention with Sahaja Yoga meditation is used in a similar way in other schools.

Theories look at the object from different angles. Therefore, different approaches are considered.

The primary change from SYM is based on a person. The secondary outward change to the surrounding majority can be explained also partly by the style of behavior of the changed behavior (as reported above).

Within the scope of our study, the changes made by the students in the Experimental Group might have been knowingly or unknowingly experienced as beneficial by many of the other students; which is why they were able to show a little of the “better” behavior and also develop a little in this positive direction. Also, they might have animated a few to start meditation also. The statistical methods analyzed a ratio of 10:1 with which the positive effect of the Experimental Group influenced the Control Group regarding the Environmental Attitudes. The Academic Performance of the CG improved by 10%. The Academic Anxiety within the whole school (measured through the Control Group) dropped by 4.6 % (EG 24.18%) through the intervention with Sahaja Yoga Meditation given to a small group (EG). The ratio of the change here was 10:2, in other words the Control Group showed 20% of the drop in the Academic Anxiety that the Experimental Groups displayed.

Summary, contribution to knowledge, conclusion & recommendations

Summary

The youth is seen as the driving factor for many processes of social change. Social and political leaders of all times, parties and all forms of governments have valued the importance of the education system for the direction of future society. The skills and competencies learned in the education system form the basis for the future potential of society. Be it language, math skills, memory or other skills (such as presentation skills). The education system is not only intended for the acquisition of functional and social skills for the professional world, moral and cultural values of and for a society can and should be conveyed as goals in the curriculum. The Indian educational tradition has always given character formation a high priority.

Sustainability is the term that summarizes the problems the world is facing today. While the term was initially used more in the ecological and climatic context, today it encompasses various areas of justice and fairness, such as gender equality, social justice, economic aspects, health, well-being, peace, etc.,³⁵¹ as well as other species³⁵².

To face these challenges the ego-centeredness has to be overcome and the common good has to be focused. More and more mankind is experiencing the global interconnectedness. New approaches, clear thoughts and a higher perspective is needed.

The classic Eastern approach to clearing the thoughts and seeing the higher perspective and principle is to meditate. Yoga is closely related to meditation. Nowadays there are many modern forms with the two labels yoga and meditation. The growing desire for clarity and personal development is reflected in the increasing number of yoga and meditation practitioners and in the public acceptance of these “alternative methods” of wellbeing. In scientific and public discourse, however, there is uncertainty about whether and how

³⁵¹ Summoned up in the seventeen Sustainable Development Goals (SDG).

³⁵² SDG 14 and 15, life below water and life on land.

meditation really works. Is there a real effect or is it an imaginary placebo effect that occurs because you want to believe it? There is also a great deal of uncertainty (in the West) about the goals of meditation.

There are many modern styles and methods that work especially in Western societies under the umbrella of “meditation” and “yoga”. The practices differ quite a lot in what is actually done (the action) and in their goals, results and effects. Some methods do not aim or purport to go beyond relaxation or better wellbeing. For example, some methods aim to achieve greater attention (more input) or focus (concentration), while others aim for “unfocused” attention. The traditional literature sources about meditation and yoga are the Bhagavad Gita and Patanjali's Yoga Sutras. There meditation is clearly described as a state that goes beyond the limitations of thoughts (thoughtless awareness), within that state the yoga³⁵³ is reached. This state leads to the development of one's own potentials. Many of the methods practiced in the West cover only some aspects of the traditional described methods (Patanjali's Yoga Sutras) to reach that state of meditation and yoga, therefore they can be understood as stuck somewhere on the road to the intended goal, while others are even found heading in the wrong direction. The most popular (and most researched) forms in the West, namely Mindfulness Meditation (MM) and Transcendental Meditation (TM), would not even be considered to be meditations in a classical understanding, as they do not aim for a thoughtless state of yoga. Since most forms only lead halfway to the goal, it is understandable that high-quality scientific meta-research attests that such practices have no, only minor or moderate effects. On the contrary, some practices even show negative effects (up to mistrust, depression, and suicide attempts). Such negative effects are not unknown to the classic meditation writings, but they report negative effects due to incorrect meditation practice. On the other hand, some “meditation” practices can definitely and undeniably have positive effects, but that doesn't make them forms of real meditation, either. Taking a walk can also relax and relieve stress, and sportive exercises can also improve general well-being and even restore emotional balance³⁵⁴. While in the country of origin (India) it is quite clear that meditation shall lead

³⁵³ Yoga is a state of connection to the fundamental powers that created us and that we consist of. Within this state these powers can flow freely and overcome and repair imbalances of our mental, physical, emotional and spiritual system and develop multidimensional well-being.

³⁵⁴ The most common understanding of “yoga” in the West, as gymnastically body postures is actually called “Hatha Yoga” and one part of the eight “disciplines” according to Patanjali performed

to a thoughtless³⁵⁵ state. According to meditation philosophy this thoughtless state will clear the mind, the body and the emotions and lead to an ascent of the being to a higher evolved personality, which acts (more) dharmic, morally aboveboard and ethical³⁵⁶, which, by our reasoning, means a truly sustainable personality. Corresponding to the main goals and activities, we developed an additional³⁵⁷ classification scheme based on classical yoga and meditation sources, since such a qualification approach was surprisingly missing in the discourse.

To research the effects of meditation, a method was chosen which essentially contains all elements of classical Hindu meditation and places a special emphasis on the thoughtless state, which is the main goal of traditional meditation. Sahaja Yoga Meditation (SYM) was chosen as the independent variable. SYM is offered in many countries around the world and in India through voluntary associations or foundations in free courses. It is considered easy to learn and practice while also being very effective. It is internationally recognized, e.g., by the UNESCO Center for Peace. International research has shown positive physiological and medicinal effects as well as positive effects on mental and emotional well-being. Some effects, such as the studied gray matter growth of SYM, appear to outweigh the effects of other (non-traditional) meditation methods. No negative side effects of SYM have been reported³⁵⁸. A few current studies on SYM already have done

to attain the states of meditation and yoga. They originally shall prepare the physical body for meditation. Performed in the best practice with the right guidance and understanding they can indeed be a part of the multi-layered way to thoughtless-ness and may even lead to some sort of small enlightenments, like personal aha-moments or growing feeling of responsibility. If they do not go that far, they still can be beneficial for a healthy body which improves a general well-being. But regular walk and healthy food habits also promote well-being, and they also would not be considered to be yoga or meditation.

³⁵⁵ A state with less thoughts, ideally none, but a state with an awareness. Usually, it can be achieved only for seconds or minutes by most people.

³⁵⁶ Also Zen, a school of Mahayana Buddhism, emphasizes the philosophy of non-thinking (Jpn. *hishiryō*). Zen Master Dōgen (1200-1253 CE) is known for his writings. He was the founder of Soto school of Zen in Japan, which is the largest of three traditional sects of Zen Buddhism in Japan. He considered sitting meditation (*zazen*) and non-thinking as the central practice of Buddhism. “Dōgen did not think the problem of original enlightenment could be resolved via ‘truth-seeking’ theories, but instead through a ‘way-seeking’ practice” (Markowski, 2021, p.104). Out of the practice of non-thinking wisdom and compassion emerges.

³⁵⁷ According to the knowledge of the Writer of this thesis.

³⁵⁸ According to the knowledge of the Writer of this thesis and apart from one reported case of headache.

research in the pedagogical and sustainable area and have found positive effects for that method.

The sample for this study was selected from 9th grade students from a public school in Andhra Pradesh, South India. It is a statistically large sample and with statistical methods it was determined by checking the normal distribution that the sample is exemplary for society. The effects found can thus be transferred to larger parts of society. On the one hand, the results can be extrapolated to all ninth graders in the state schools in Andhra Pradesh. In addition, a possible further transferability of the results to other grade levels, other types of schools and even other states in India is to be expected, since the research to date has not given any reason to assess the effects of the SYM intervention on the selected age group only. International research has not found any indications that the effect of SYM is limited to a certain cultural area, either. Therefore, the hypothesis that the research results found here can be transferred to students in other countries does not seem unjustified. The situation is different when it comes to the question of feasibility in the school background. The literature research on socio-cultural backgrounds has shown that the socio-cultural context of India is much better suited to use meditation as a method of personal development in school education than the western socio-cultural background allows.

It is difficult to scientifically measure the full effects of meditation. According to the understanding of the literature and the researcher, meditation effects are multidimensional and overall holistic in nature. We can only look at small parts of its effects and must keep in mind that the measured effects do not reflect the effects (or benefits) of the meditation as a whole³⁵⁹. Research into the relaxation effects of meditation is widespread. Therefore, it was chosen by the researcher to focus on other selected variables that are important to both society and the educational system, be it the Indian educational system or another³⁶⁰.

³⁵⁹ The process of moral reasoning as well as value systems that lead to true sustainable actions are to difficult to measure scientifically for example.

³⁶⁰ International research does not indicate a limitation of meditational effects to specific social systems.

Attitudes to the environment (DV1-EA) form the basis for ecologically sustainable action, concern for the environment and attitudes to the environment form the basis for future efforts to develop approaches to protect nature and find sustainable solutions. In addition, environmental attitudes can be seen as part of a whole series of sustainable attitudes that together form a more or less sustainable personality. Since different behaviors of an individual are not necessarily always consistent in different contexts, conclusions can be drawn from attitudes towards the environment on attitudes towards other areas of sustainability (e.g., social justice) to a very limited extent only.

Anxiety as such limits the potentials of an individual. For students in general and in India in particular Academic Anxiety (DV2-AA) is a big issue in a highly competitive education system and a highly competitive job market. Apart from limited performance, academic anxiety can lead to disturbed social behavior, drug consumption and self-destructing behavior or to an aggressive behavior towards others.

The Academic Performance (DV3-AP) is the main indicator of school education success in the society. It reflects only a few, mostly knowledge related, skills of a student, but nevertheless it is highly meaningful for the students, the parents, higher education institutions and future employers. To measure effects of meditation on the education through the academic performance of a student has its limitations, as the grades mostly reflect knowledge and memorization, which are not primarily trained or focused by meditation and can be seen as only side-effects of meditation. Nevertheless, the academic performance is an indicator with a high level of importance for the society.

Through the statistical method of the Analysis of Covariance (ANCOVA) the pure effect of the intervention with SYM was found on the three dependent variables (DV). All DVs showed a significant change in the Experimental Group (EG) through the intervention. The research showed significant positive effects of Sahaja Yoga Meditation on Environmental Attitudes (DV1-EA; 10.81% positive change), Academic Anxiety (DV2-AA; 19.78 % drop), and Academic Performance (DV3-AP 4.08%, improvement). The amount of change in the Academic Performance was found to be greater than that found by other research on other meditation techniques. This shows a validity of the ancient scriptures in their emphasis on the importance of the thoughtless state for positive meditation results.

The statistical results prove that the intervention of half a year of Sahaja Yoga Meditation showed significant results that can be scientifically attributed to SYM. Standard questionnaires were used. The Experimental Group and the Control Group were large (total N=400). The investigation period (6 month) was comparatively long. These results can be extrapolated to the research population the 9th grade of state schools in India. The qualitative evaluation even indicates that the results are not limited to the 9th grade of state schools in India, but could even be extrapolated to entire schools for all grades.

Hence it can be formulated from the results of the Experimental Group (EG), that it can be expected that whoever of the population does practice of Sahaja Yoga Meditation for half a year, will get a more positive attitude towards the environment, the Academic Anxiety level of that individual will be lowered, and the Academic Performance will exceed.

There were also changes in the mean values of the Control Group, which turned out to be significant and partly could only be explained by the intervention with SYM. Changes in a control group can always be due to various outside factors that are not controlled by the experiment. With the statistical methods of ANCOVA, in particular the PESQ value (Partial Eta Squared), that part of the change can be calculated that can only be explained by the intervention and that excludes other random or uncontrolled effects. The changes in the Control Group were found to be significant. The changes in the Control Group were around 10% (DV1-EA and DV3-AP) and 20% (DV2-AA) of the changes that occurred in the Experimental Group.

From the results of the Control Group (CG) it can be formulated that it is to be expected that the individuals from the population will be positively influenced by an individual who has practiced Sahaja Yoga Meditation for at least six months. The quantitative research has shown that these are not results that occurred accidentally in this experiment, but that they can be confidently partially explained by precisely this intervention (which was carried out on the other, the Experimental Group).

These small but significant effects can be explained, for example, by a positive social influence of the meditator on the passive individual, as follows: The positive change observed for the active meditator causes an increase in the general (norm) level. The

increased positive level affects the (passive) individual member of the population. This can be illustrated using the example of academic performance. Let us assume a normal school without meditation intervention and let us assume a student who has the ability to achieve a certain level of performance. The student is new to the school and should be assigned to a new class. In general, teachers and parents assume the following influencing effect: The student will develop greater capacities in the class with the higher level of performance. He either will be self-motivated to adapt this higher level of performance or the level of instruction is higher and therefore his standards will be shifted upwards; The positive effect of good influence. The same student put into a class with a lower proficiency level is likely to lag behind his own possibilities, because the teaching level will be lower or because he or she does not feel challenged by the other student achievements and is partially adapting to the lower proficiency level of the fellow students.

Likewise, the small but significant positive effects that were found in the members of the Control Group can be attributed to the general positive social influence of the meditators. It seems important to emphasize that the changes in the Control Group seem to have resulted from the positive changes that the students in the Experimental Group brought to their school. This could have happened by setting an example or by raising normative performance standards in many ways through the Experimental Group. The Control Group did not start to meditate, this only happened in a few cases, which were too few to explain the overall change of the Control Group (N=200). One could imagine that the Control Group were directly inspired by members of the Experimental Group to meditate or because they had noticed the positive changes in the members of the EG, attributed these changes to the meditation and, spurred on by it, also started to meditate. But this was not the case. The teacher testimonies and students' diaries indicated that the EG did not influence the CG directly to begin meditation as well. The changes in the individuals of the EG apparently must have had an inspiring effect on the CG and led to their change, smaller, but in the same direction.

Hence, it can be expected that non-meditators that are in social contact with meditators will experience a change of their attitudes towards the environment in a more positive way, the academic anxiety level of that individual will be lowered, and the academic

performance will exceed. The change comes not just "by the way", but because someone else is meditating.

The qualitative assessment further showed that the effects of SYM were not limited to the researched dependent variables. It also opened a more detailed understanding how the measured effects were reached, and it underlined the significance of the beneficial effects.

The testimonies of the students of the Experimental Group showed in a very impressive way the multitude of changes that they observed in themselves. These changes were also seen by their parents, teachers, and friends. For example, they lost fears, became more confident, behaved better and made friends. That means a lot to them, because school life is an important and probably the central part of their lives for most of them at this age. Unpleasant school experiences can be borne for a lifetime, turning them into better experiences is a great accomplishment right now, but will resonate for a lifetime. Many have said that they want to continue with SYM because they know that meditation has changed their nature and that the outside world has reacted differently and more positively to them through its own inner change. They found a new level of sincerity and concentration, their interests shifted to deeper subjects, and they improved their academic performance. They found an appreciation for harmony and peace in personal relationships and they found new methods of their own, sometimes unknowingly, to manifest that peace and harmony in and around them. They gained respect and a sense of connection with nature. This gave rise to the urge to do something to protect and support nature. School initiatives were launched by the students. There were reports that their change was observed by others who did not participate in the experiment and that these changes affected the observers and also caused them to change their attitudes and behaviors. Only very few learned the connection between the observed changes and meditation practice and began to meditate themselves. For most of them, the positive influence of the observed positive behavior must have served knowingly or unknowingly as a model. The role model effect was also explicitly mentioned by some students as the influence of their mediation teacher on them. All of them experienced the meditation teachers positively and expressed a high level of appreciation for the lessons, even those who were initially very skeptical. The theoretical part of the lesson connected with them and their experiences and was followed with great interest. The feedback from the students was positive overall.

Surprisingly even those who felt by the random choice of their class as meditation class they were forced into something that they expected not to like, were happy with the course as they finally experienced the positive effects on themselves. Looking back, they felt privileged and grateful for the course and suggested a course for everyone in the school as a good idea.

The teachers who carried out the SYM training and the other teachers at the ten schools selected for the research project reported a multitude of changes. Changes that they observed in the individual students of the Experimental Group, changes in the class as a group and the impact of these changes on the school as a whole. The individual students gained in qualities, each on an individual level, basis and direction. Some reduced their deficits such as aggressive behavior, inattentiveness or a lack of punctuality. Some found a new approach to the subjects taught. They have improved as a person, they gained in self-confidence, they took on responsibility and some showed themselves at a level that their teachers would not have previously thought possible. Shy students who were unable to speak in front of the class won school-wide debate competitions.

At the class level, the group became more attentive and interested in the subject and the lessons. Less disruptions, more participation, increased creativity in the thought process of the students and a growing respect for the other students and the teacher were experienced. This made teaching more effective and satisfying for both students and teachers. Teaching became easier and more joyful for the teachers and the students.

The teachers noted an influence of the changed individual students and the group (EG) on other individual students and on the school as such. The other students did not necessarily associate their new appreciation for the EG students with the fact that the EG students were meditating. Many times, they were not even aware of it. They felt friends with the EC students because they liked them, they took part in projects such as garbage collection or Green School, which were initiated by the EC students, because they found it joy giving, meaningful and in a certain way sustainable ("If the school is green, it's nicer to play there.") or because they liked being active and in company with the other students. The EG students acted as role models, engines, or catalysts for the change in the social structure and social activities in the school. Second, but to a lesser extent, some students

were aware that the EC students were meditating, and they associated the positive change in them with the meditation, so they asked their teachers that they wanted meditation classes as well.

The teachers (meditating and non-meditating) found the observations described in their feedback so remarkable, outstanding, and numerous that they themselves associated them with the meditation experiment. For them everything that was observed in their schools could not have been just a coincidence. At the end of the project, meditative and non-meditative teachers were convinced of the effectiveness of this SYM project and tried to find ways to extend the meditation sessions to the entire school.

Through the statistical method of ANCOVA it was also possible to find and quantify significant effects of the intervention on the Control Group (CG). This was the first time that a quantification of induced social change by a meditation intervention was measured. In the intervention with Sahaja Yoga Meditation, the induced effect shown on the Control Group was approx. 10% of the effect shown by the Experimental Group on improving Environmental Attitudes and Academic Performance (DV1-EA and DV3-AP) and 20% on Academic Anxiety (DV2-AA).

The ANCOVA makes it possible to separate changes, that could be explained as random effects, from effects that are certain³⁶¹ due to the intervention. An explanation approach³⁶² is given through a combination of theories of social change. The Experimental Group showed a positive change in the measured three dependent variables due to SYM. This means they, as a group, were positively deviant from the norm. The norm was measured in the pre-test and showed nearly the same result for EG and CG for all DV. The CG can be regarded as a sample for the whole school for the measurement of the effect of the Experimental Group on the whole school population. The positive changes measured in the CG could occur for example by role model effects of the EG. If in a school a group of students are better in many aspects that are regarded as valuable by the society, this could lead to imitation or adoption processes in the other students. In the form that they

³⁶¹ At a certainty level of 99%.

³⁶² Measurement errors or errors of calculation have been excluded, by revision of the proceeding.

are confronted with better social influence. A student on a school with more higher performing students and with a general better behavior will be more likely to put efforts in his own academic performance and will be more likely to show good manners; compared to the same student in a school with more students with lower academic performance and worse behavior. That is why parents prefer to put their children on better schools than on schools with a bad reputation.

More generally, it has been theorized that internal and external conditions determine whether change is perceived as positive or negative, and internal and external conditions determine whether positive change is accepted. In this study, the internal and external conditions, the social context of the social group (school) were positive for the adoption of positive changes.

Conclusion

The aim of education is to provide students with the skills and methods that will enable them to remain in mental, emotional, physical, and spiritual balance throughout their lives and meet the challenges of the world in a most equipped state. Meditation is known as a method that can achieve this complete equilibrium. Many “meditation” and “yoga” practices are thriving and growing in popularity around the world. While basic knowledge about these techniques and their benefits is widespread in India, relatively little is known in Europe and America.

India is the motherland of these methods; Meditation is part of India's cultural heritage. The socio-cultural differences in the development of societies in the West and in India are reasons for the asymmetry of knowledge in relation to yoga and meditation. Meditation and yoga practices are part of many ancient scriptures, such as the Bhagavad Gita or the Upanishads, which are important for the socio-cultural identity of India. There is a tendency in Indian society to view these practices as a cultural heritage that would enrich today's world and several government initiatives are campaigning for a renaissance of these cultural treasures. The Indian government is promoting the integration of these, in the Western world called “alternative” treatments, into the national health strategy, through

the Ministry of AYUSH (Ayurveda, Yoga, Naturopathy, Unani, Siddha, Sowa-Rigpa and Homeopathy) and the initiative of SATYAM (Science and Technology of Yoga And Meditation). On an international level through the United Nations the International Day of Yoga (21.06.) was installed acknowledging the value of these practices “for the health of the world population” (UN, 2014, 69/131).

Not only is the general image of meditation in public different in India from that in the West, but so is the state of research. As “alternative” treatment methods of yoga and meditation became more and more popular in the West, research interest in these topics has also grown in the West. There is a lot of research going on today. Two methods are dominating by quantity of the research; Mindfulness / MBSR Meditation and Transcendental Meditation. Much of this research shows many benefits of the practices. At the same time, however, there is criticism of inadequate scientific methods or the insufficient informative value of these studies. Contraindications have been identified for individual practices that suggest that it is better for certain groups (e.g., schizophrenic) not to use these practices. There are also studies on the side effects of individual methods. It therefore seems advisable to differentiate between certain meditation techniques much more precisely. Meditation is often used as an umbrella term, with little distinction between methods or the specific method only mentioned in passing. This is primarily an appeal to the scientific community as it should have the distinctiveness and also influence the public discourse.

An expansion of knowledge and the consideration of (old) original sources on yoga and meditation are not only seen as a great help for the West in order to achieve a more precise differentiation of the techniques with the assignable effects; Indians can also benefit from this, as the general knowledge is widespread but not in-depth either. The original goal of meditation was to get into a thoughtless state of mind in order to reach a state above the constant thought waves of the past or future. All other goals such as a healthy body with an intact, well-functioning nervous system, emotional balance, a moral (dharmic) way of life or special breathing techniques (pranayama) were partial steps to achieve this state of calm mind. Likewise, a focused, non-wandering mind, as strived in mindfulness meditation, is just an intermediate step to becoming a calm mind. Sahaja Yoga Meditation corresponds to the original goals of a silent mind meditation written down by Patanjali. In addition, its practice is compatible with modern life. The research on

Sahaja Yoga Meditation indicates a variety of positive results, also in many other dimensions, some are related to school context others are not directly connected to it.

In an Indian environment there seems to be low-cultural barriers to implement meditation programs in schools. In the Indian society meditation is considered as a valuable part of education. Parts of the Indian education systems are searching for a way to improve the system in the direction to go beyond the memory orientation on bookish knowledge and promoting other skills that are more profound. In an Indian context the multi-dimensional effects of meditation do not need much explanation. A general personal growth towards the fulfillment of the subject's own potential is somehow expected. It may be helpful for the political argumentation, if the general knowledge of the benefits of meditation is supported by modern scientific research methods, and if research can back up the favorability of one method before another. The literature research has shown that different yoga and meditation methods show different results, some are more effective and sustainable than others and some even have shown negative or no results in some cases. (General) research indicates that meditation methods that are in line with the ancient descriptions lead to better results. The traditional aim of meditation is a state of thoughtless awareness³⁶³ and Sahaja Yoga Meditation is a representative of this meditation tradition, research indicates its effectiveness. This study has shown further significant positive effects of SYM related to education.

The study had a large base (N=400) and the effects shown were large. As a representative of pure and in the traditional sense true meditation, SYM showed higher effects than other meditation methods compared to the most popular "meditation" practices that do not correspond to traditional standards.

The dependent variables examined were indicators for two orientation levels, which contain both a personal and a societal level. A sustainable social character geared towards the future common good was measured using the example of changing Environmental Attitudes (DV1-EA). The development of one's own personal potential and

³⁶³ Aware of everything, not withdrawn from reality, not in trance; with no thoughts (not to be confused with no brain activity, the brain also shows electrical activity during this thoughtless periods).

the ability to overcome obstacles that stand in the way of this development were measured through the Academic Performance (DV3-AP) and the Academic Anxiety (DV2-AA).

The results of the study showed a significant and powerful reduction in anxiety levels (DV2-AA), improvement of the Academic Performance (DV3-AP) and a more sustainable and ecological attitude (DV1-EA). Improvement regarding anxiety (less anxiety) and betterment of the Academic Performance are dimensions that are of high value in the educational and academic context. It is known that stress and anxiety are widespread among students and can significantly affect student performance and thus limit their potential. In the intervention no special courses on anxiety and especially no coaching on other school subjects were given. Sahaja Yoga Meditation works through its practice, by reaching the silence (peace) in the mind.

The effects found on students' attitudes towards the environment are not only remarkable because, at first glance, there seems to be hardly any reference to meditation. In fact, no specific information's (knowledge) regarding the tested dimensions were given to the students, no special lessons on the environment and sustainable behavior were given. But the project showed a result in this dimension that appears promising for future sustainable educational efforts. One student mentioned that he had the knowledge about what was good for the environment and why it was necessary before, but meditation gave him the feeling of connectedness that made his desire to do something grow and eventually he did bring this knowledge into practice. The statistical results underscore the observations made by students and teachers that SYM has actually brought about a change in students.

Other research by Bocconi University showed the effects of SYM on sustainable behavior in the area of business decisions (Schneider *et al.*, 2010). The Bocconi results and this study suggest that the final and most important step from knowledge to practice may be facilitated by periods of thoughtless meditation that connects to deeper internal processes than the knowledge-based mind.

Although the aim of study was not to find out a direct causal allocation of the effects shown. It is an interesting question that is somehow running sublime through the whole work:

What causes these effects? Is it the belief that it works, that makes it work? Is it a socio-cultural phenomenon? Does it basically originate from stress reduction? Or can it be the meditational state?

People's faith can move mountains, it is said. Meditation often has a spiritual dimension and has a component of enabling self-improvement. The latter one may be a strong attraction and thriving force for those who deliberately choose to do meditation practices. Our experimental group had no choice, they had to meditate, but over time the feeling of being able to do something on their own to help them become their own master may have become a motivating force for their consent to meditation. Albert Bandura worked largely on the construct of self-efficacy and incorporated social learning theory and extended social cognitive theory into it. "People's belief in their capabilities to produce desired effects by their own actions are the most important determinants of the behaviors of people choose to engage in and how much persevere they are in their efforts in the face of obstacles and challenges. Self-efficacy theory also maintains that these efficacy beliefs play a crucial role in psychological adjustment, psychological problems, and physical health, as well as professionally guided and self-guided behavioral change strategies" (Maddux, p. 277). This may be even more applicable for mindfulness meditations than for Sahaja Yoga Meditation, as mindfulness is in its practice focusing more on what you can do yourself, while SYM emphasizes more the "passive" attitude and that you are not the doer yourself, but let it happen. Nevertheless, self-discipline also plays a role in SYM, and at least there is always the choice whether or not to meditate, which is also a kind of personal empowerment. And the observations have shown an increase in self-confidence of the students (e.g., presentation qualities). "Self-efficacy has proven to be a fruitful construct in spheres ranging from phobias and depression to career choice behavior and managerial functioning" (Lightsey, 1999, p 158).

The socio-cultural context in India is, as has often been mentioned, generally producing a more positive attitude towards meditation than in many other countries. The District Education Officer (DEO) encouraged schools to participate in this experiment. We heard about the beforehand general positive attitude from the teachers (also from those who were not the meditation instructors) and also from parts of the students. This clearly makes the individuals more open to get involved into the process of meditation. But do this

openness and the cultural points of connection have more far-reaching and profound effects than a generally greater willingness to try out a form of meditation? Many of the individual results shown (such as physical effects, reduction of anxiety and stress, etc.) were previously also reported in research samples from around the world (USA, Europe, Australia, Russia, etc.) for the same meditation technique (SYM). Therefore, it can hardly be the cultural context that should bring about the effects shown. As most of the research on SYM (in chapter 2.4.1) was conducted with randomly chosen test participants (students, people suffering from certain diseases, menopause, etc.) there was also not a high personal interest from the participating individuals before the respective research about the topic of meditation or its wider connection to an Indian socio-cultural or spiritual environment.

Hans Selye worked out the original stress concept in 1936 and spent his life developing it further. Physical and psychological stress caused or accompanied by biochemical or environmental stimuli are now considered to be the cause of many physical and mental illnesses that manifest themselves in a preliminary stage as functional restrictions. Stress can impair memory functions, weaken immune functions, disrupt the metabolism and cause a multitude of diseases. Selye himself a physician and biochemist was searching for a hormone treatment to stress (Selye 1976). As “meditation” practices are foremost known as stress reducing methods. So, if the stress is reduced, this will pave the way to the improvement of stress-related physical illnesses and psychological blocks, in the sense that after the stress has been removed, many things become possible for the individual that were not possible before with a higher level of stress. The causal chain described may certainly be the cause of the effects shown - *noun est omen* - for the popular and quantitatively well-researched technique of Mindfulness Based Stress Reduction (MBSR). The Johns Hopkins University found for MBSR in a review of 83 studies only “moderate evidence to improve anxiety, depression and pain and low evidence to improve stress/distress and mental-health related quality of life”, and “no effect or insufficient evidence of any effect of (the observed) meditation programs on positive mood, attention, substance use, eating, sleep, and weight” (Goyal et al., 2014, p. 1). This indicates that stress reduction can lead to moderate and minor improvements, but that these are not as diverse as the results observed in our study, in particular the positive

developments in social commitment in schools (environmental projects) can hardly be traced back to reduced stress.

So, the results of this study show that there might be some truth in the ancient scriptures and knowledge of meditation about the effects of meditation. Because with the method they prescribed (thoughtlessness), the results they predicted were also achieved - positive personal development in many directions was nurtured. The group examined was large enough to draw conclusions from the collected and statistically evaluated data on larger and general development tendencies. The effects measured on the means were significant and large.

As mentioned in the descriptions of the variables (Chapter 3), the measured variables are not the only dimensions that meditation affects. Rather, they are indicators of the dimensions in which a development of meditation types can go, that go beyond stress and relaxation (which, however, shape the social representation of meditation in terms of public appearance and general perception). In the traditional scriptures, meditation leads to the development of a character full of virtues and values, who overcomes individual smallness and ego-centeredness, a personality that is wise, takes all implications into account, thinks long-term and has the common good in mind.

Such ideal characters are universal, they are described in the ancient Indian scriptures, but they can be found equally in the original Confucius, Lao-Tse, Buddhist, Christian, Socratic, Zoroastrian, Mohammedan scriptures and teachings, means basically in all ancient advanced cultures. The descriptions of an ideal character go back to spiritual and religious teachings, which may vary in the secular expression of their followers today and in past, but are largely the same in the statements of the founders, only that the messages conveyed were adapted to the culture, language and time of the founders.

Transcribed such a character into the wording of today, it would be a true sustainable character, striving for a long-term good development of society, economy and ecology, with good judgment and an intuitive sense to find pragmatic cross-departmental solutions and a good dose of creativity to develop innovations of all kinds and the self-confidence

to promote them with a high level of emotional intelligence that keeps everyone involved in mind (stakeholders) and knows how to win them to the common cause.

Therefore, the development of higher Environmental Attitudes (that was shown) can be considered as an indicator for a more general development towards a sustainable character, in the sense just described. The diaries of the students and the observations of the teachers describe some of the range of character building, as the students grew in confidence (presentation skills), they become more social (not beating) and inclusive in their actions (helping and working together in projects), they figured out own solutions to problems that they found themselves (they have greened the school yard to have a more comfortable atmosphere to play; they figured out a group plan to save water when washing up the school lunch). All these are facets of a sustainable character, as described. The Qualitative data (chapter 13) showed the range of possible developments. The experimental study and its analysis have shown the general transferability, that with similar applications of the instrument used here (Sahaja Yoga Meditation) similar results can be expected elsewhere too.

In the same sense a lower Academic Anxiety (DV2-AA) can be understood as an indicator of an internal development towards a self-confident character who rests in himself, does not allow himself to be emotionally influenced negatively externally, is more optimistic and trusts in his self-assessment on his abilities. In addition, the individuals have significantly improved their skills and abilities. This was shown with the same spirit of exemplarity in their Academic Performance (DV3-AP). Here also many factors contributed to the result, they studied more serious, were more interested, improved their discipline, etc. Off course a reduced Academic Anxiety can influence a better Academic Performance, as well as a better Academic Performance may result in a lowered Academic Anxiety. But these causal relationships between the two dependent variables are not the issue of this work.

What we have seen overall in this experiment is a general improvement in various skills, abilities, and personality traits on a mental, emotional, and social level. These changes were triggered by the intervention with Sahaja Yoga Meditation. It is possible that the causal interrelationship between the individual manifestations is that a lowering of anxiety and stress, leads to a relaxed personality that gains more power to improve its skills and

abilities. In the same way it is possible that a thoughtless state frees the mind, improves cognitive and emotional abilities, which lower stress and anxiety which may cause or maybe caused by a better social interaction, which may lead to an improvement in skills and abilities. It might as well be that meditation improves skills and abilities, which results in reduced stress and anxiety, which leads to a more stable and powerful emotional and cognitive state, which leads to a more social behavior. In the end all the three sketched interrelationships may all three be applicable, but on different individuals and there might be as many causal interrelationships as individuals that took part in this experiment – as this is exactly what meditation theory says, the development depends on the individual, its condition and its way of sincerity and discipline with the meditational practice.

It seems important to state that all of this was triggered by (in a nutshell) simple practice of sitting down, closing your eyes, and trying not to think. And yet this would be only observing the outside, that what can be seen, what is done, what can be named, in the linguistic sense 'the real' practice of meditation. It is doubtful that this alone could lead to the multiple observations that we have had. In fact, this is also what meditation philosophy says, the outward process is not important, and will lead to nowhere, if the meditative state is not reached. The meditative state of a silent mind, of the absence of thoughts, is the 'reality' of meditation (in a linguistic sense). This meditative thoughtless state of awareness makes the difference and triggers everything else. How it triggers and where first and to what extend depends on the individual. If that meditative state of a thoughtless mind is not reached by the practice of meditation, it will not show all of the effects possible through the meditative state³⁶⁴.

The 'reality' of the meditation state cannot be grasped by scientific research, but only the range of the observable effects. For them there will be causal interpretations that might

³⁶⁴ Practice of 'meditation' without thoughtlessness may show some positive results (as exemplary shown for Mindfulness/ MBSR Meditation and Transcendental Meditation in chapter 2.2) but at a moderate or low level. But according to mediation philosophy this causal relationship will be much more specific in its causality, for example Mindfulness Based Stress Reduction (MBSR) will primarily have effects caused by a stress reduction. And a stress reduction practice is not a meditational practice in the traditional sense. While, according to meditation philosophy, there are no negative effects through meditative state, other practices or incorrect practices might even show some adverse effects (see chapter 2.2).

differ from the interpretations according to the philosophy of meditation. However, this does not necessarily have to mean that they cannot be true at the same time, it can just be due to a different point of view or a different perspective. And the perspective has its socio-cultural roots. On a pragmatical level we have found positive results from a method, that works and is appreciated in the social setting of the experiment.

Political and Educational Outlook

Some of the participating schools have decided to extend the SYM classes to the entire school after seeing the positive impact on students. Impressed by the results, which were previously only available in the form of the experiences of the teachers on site, other schools that did not take part in the experiment also decided to introduce SYM meditation courses for their students. Obstacles to large-scale implementation of SYM in schools at the state level could be the number of SYM trainers available in schools. Fortunately, enough teachers with the same SYM meditation background were found in this research. But not every school will have a SYM teacher on its staff. External volunteers could help, but these trainers also have to do their normal job and cannot be freely planned. Some SYM trainers are retirees or housewives and are therefore more flexible in terms of time. There are no full-time SYM trainers; cost freeness is part of the SYM philosophy and therefore will not be changed. For pilot projects (also with additional research), voluntary courses as an extracurricular activity with students should be possible by external SYM trainers, according to the trainers involved in this research. For a more comprehensive implementation (e.g., nationwide, all grade levels, all state schools), it was recommended to promote train-the-trainer courses with interested teachers.

As the relevant research shows (as mentioned in the literature review), there are many ways in which teachers can benefit personally and professionally from meditation. If they have mastered the SYM technique to a certain extent, they can spontaneously use short meditation sessions as an educational tool in the classroom. Meditation can be used, for example, to calm an excited class or to enliven a lethargic class. The experience of the study has been that the class is more attentive after the meditation sessions and the willingness to learn increases. It would also be conceivable to embed 15-minute

meditation sessions in the daily greeting routine for all students in the morning or after the break with the aim of balancing and focusing the students for the next class.

An implementation of traditional meditation practices in schools would support the Indian ideals of education lived and articulated by Gandhi and Tagore. With their educational concepts, both essentially aimed at a truly sustainable development of the individual - for the benefit of the individual, the country, and the global community. For India, the inclusion of meditation, which corresponds to traditional ideals (like SYM), in the educational concept could be a new way to an educational independence that uses the sociocultural context to convey an effective technique with the aim of uniting tradition with a modern spirit of multidimensional sustainability.

For the western world, a greater integration of meditation in the educational context seems difficult³⁶⁵. In India there is generally a positive attitude towards meditation, while in the West there is a predominance of skepticism³⁶⁶. There seem to be socio-cultural hurdles for embedding meditation in the Western school system. While the socio-cultural framework conditions in the Indian context seem to speak in favor of embedding meditation in the educational landscape. The philosophy of meditation is widespread in India.

³⁶⁵ Not because meditation, especially SYM, wouldn't work there. On the contrary, much of the research on SYM comes from an international, western background. Research gives no indication that the effects shown by SYM are socio-cultural phenomena tied to specific cultures. Rather, the data speak for a universal applicability of SYM. The significant positive effects were shown worldwide without any cultural restrictions or peculiarities.

³⁶⁶ Too many bad experiences with supposed and self-appointed gurus and organizations that pursue monetary and other worldly interests justify this skepticism. In addition, many methods and their results seem rightly called into question. It is likely that the negative or vague image of meditation is based on the fact that the main methods and protagonists considered are rather distorted images of traditional meditation techniques and their masters. Rabindranath Tagore, the great Indian polymath, had the vision of an intercultural exchange in which the East would benefit from the technological knowledge of the West, while the Western societies could benefit from the wisdom of the East. His critics described both wishes as illusory, because the West would not share its technical knowledge and, on the other hand, would not accept Eastern wisdom. The wisdom of the East is available for free.

This work is not able to or intended to prove whether the 'reality' of the meditative state exists³⁶⁷ with all its traditionally reported consequences, or if there is only the observable 'real' of socially induced interactions and effects. Still, even if the self-reports of the individuals about their experiences with the intervention of Sahaja Yoga Meditation would be biased by a general bubble of social beliefs and pure imaginations about the real processes, which according to the critics does not result in any reality of the meditative state, but remain pure socially induced effects, if SYM shows all the here statistically researched effects and the other in the testimonies of the students and the teachers reported outcomes – anyway this type of thoughtless meditation seems be a promising technique for personal development that could be imparted in the education system in India.

Limitations of the work and recommendations for further research

Action research is "described by Dick (1991) as a family of research methodologies which pursue action (or change) and research (or understanding) at the same time. In most of its forms it does this by action and critical reflection and in it later cycles, continuously refining methods data and interpretation in the light of the understanding developed in the earlier cycles" (Altrichter *et al.*, 2002, p. 131). In our case the intervention with Sahaja Yoga Meditation was the researched action, but this action also initiated at the same time a critical reflection of Sahaja Yoga Meditation as a method through the teachers participating but also of those not directly participating, but who were involved in the group discussions afterwards. As they found SYM a promising method for a positive development of the students, some schools decided to expand this experiment in their school. Plans are there even to expand it to further schools. With the experiences of this work and the conclusions out of it the next cycle of research can start and expand the research questions as well as the implementations.

³⁶⁷ This can only be found out in the personal experience of the meditative state.

The present research attempted to find the effect of Sahaja Yoga Meditation on Environmental Attitudes, Academic Anxiety and Academic Performance on secondary school students in India. Thus, the following suggestion for further research may be taken up by different researchers.

Present study was limited to state-run Zilla Parishath High Schools in the East Godavari District of Andhra Pradesh state, India. It can be taken further by recommending state and non-state/ private schools, involving rural-urban areas, in various districts of Andhra Pradesh, as well as in other states in India and in other countries.

Present study is limited to 9th grade with sample size of 400 students. A similar study can be carried out with students from different grades using larger samples. It can also be extended to higher secondary students and universities

The meditation program in the present study was limited to 45 minutes a day for only six months. Although it a longer period of time compared to with other studies mentioned in the literature review, it is recommended that the intervention be conducted over an extended period of an academic year or more to see how the students benefited from the meditation.

The study included only three significant dependent variables: Environmental attitude, academic anxiety, and academic performance of secondary school students. However, these three selected variables are not the only dependent variables that might depend on the effect of meditation of secondary school students, but a number of other dependent variables also need to be taken into account, e.g., memory, intelligence, stress, well-being, attention, etc. Future researchers might consider including several dependent variables to predict the effects of meditation among students.

The design of this study was with an Experimental Group and one Control Group. The Control Group did receive no extra treatment. For us it was not practicable, because an extra activity in an extra group would have needed more teachers to voluntary invest their time (which was already much) in this experiment. And the placebo treatment should have a similar direction as the intended research variable. For our research we had three

different directions of the dependent variables. To research Academic Anxiety, a type of relaxing program could be used, for Environmental Attitudes an extra environmental course and for the Academic Performance extra lessons in particular subjects would have been possible placebo treatments. A setting where the Experimental Group is compared to a Control Group would be useful to exclude side effects that might occur just through the experiment. These experimental designs, called randomized controlled trial (RCT), are popular in health sciences, for example to uncover placebo effects (Merret, 2006, p. 146). But for further research aimed at finding and specifying the exact nature of the causes of the effects induced by meditation, it would be useful to ponder.

Aware of this, we tried to include or exclude other possible explanations for the effects shown. For this work we came to the conclusion that there were no biases in the results from the mere influence of the awareness of being part of an important experiment (the Hawthorne effect see 12.7) or that the students were potentially being given extra attention or attributed specialty by the teachers (the Pygmalion effect see 13.1). The assumptions of these effects were tested and were found not to be present in this experiment, so that these biases cannot be concluded here.

Still there is the possibility, like there is with every experiment, that not every possible influence factor was considered. Therefore, for further endeavors a RCT design could be useful to have a further control measurement.

The current study cannot conclude or limit the cause of the observed outcomes directly to one particular source, neither to the state of meditation, nor to social conversion nor to psychological factors or other influences that one might think of. An intended study on the direct causal relationship of the effects would make other research instruments necessary, if adequate ones for such an endeavor do exist, as they have to cover many dimensions that play a role here (e.g., mind, body, emotions, sensical perception, psychology, neurology, social representations, cultural context, ...).

At least, in a pragmatism sense, it can be concluded that in this experiment with the intervention of Sahaja Yoga Meditation, many positive effects have been observed and in case of the statistically analyzed dependent variables (Environmental Attitudes, Academic

Anxiety and Academic Performance) these effects were significant, considerably large and they can be extrapolated on larger parts of the population.

The benefit of this work is seen in laying a ground for further research in this field with a solid amount of data and sophisticated statistical analysis, that at least for experimental meditation research is at a high level. The action research approach with the participation of the teachers, directly as meditation instructors or in an observer role of the other teachers of the school, has already triggered further research, even so at the moment without scientific intention on a practical try-out basis through the teachers.

Summary in French

L'appréciation croissante de la méditation, du yoga et des méthodes alternatives pour la santé mentale, émotionnelle et physique est un phénomène sociologique. La philosophie de la méditation indique un développement personnel sur diverses dimensions qui peut être compris comme une véritable personnalité durable avec des compétences, des capacités et des vertus. Atteindre un état méditatif irréfléchi est une condition préalable à cela. Cette hypothèse n'est pas satisfaite par de nombreuses méthodes, ce qui peut être la cause de points de vue controversés sur la méditation dans le discours scientifique. L'étude actuelle indique un développement personnel positif général sur un échantillon large et représentatif (n=400) d'élèves dans un environnement socio-culturel indien par l'intervention avec Sahaja Yoga Meditation. Les résultats quantitatifs de l'ANCOVA ont montré des effets positifs significatifs sur les attitudes environnementales (DV1-EA ; 10,81 % de changement positif), les niveaux d'anxiété scolaire (DV2-AA ; baisse de 19,78 %) et les performances scolaires (DV3-AP 4,08 %, amélioration). Les données qualitatives des journaux d'étudiants et les commentaires des enseignants donnent un aperçu de la causalité qu'ils ont établie - c'était l'expérience de l'état méditatif d'inconscience à travers l'intervention avec Sahaja Yoga Meditation, qui leur a été donnée quotidiennement pendant six mois. L'expérience ressentie personnellement était l'essentiel pour leur changement. Ils se sentaient connectés à la nature et à eux-mêmes, beaucoup ont commencé par l'introspection et la réflexion sociale et ont changé leur comportement social, qui était valorisé par leur environnement social et qui n'était pas en

mesure auparavant d'apporter ce développement. Grâce à l'expérience, les étudiants sont devenus des personnalités plus sûres d'eux, ils ont amélioré leur comportement social, ils ont lancé des projets scolaires pour l'environnement, ils ont trouvé plus d'intérêt et de sincérité dans leurs études, pour certains leur santé s'est améliorée et bien plus encore. Le cadre socioculturel de l'Inde est considéré comme contribuant à l'acceptation, à l'appréciation et à l'application harmonieuse de cette méthode dans l'environnement scolaire.

Le développement durable, sous tous ses aspects, est la principale tâche et le défi majeur des sociétés d'aujourd'hui et de demain. Les économies et les sociétés devront développer de nouvelles approches en matière de production, de consommation et de coexistence commune, par exemple, pour faire face aux migrations de nature économique et écologique ou pour arbitrer la répartition des richesses au niveau national et international. Le développement technologique est très rapide et les temps d'adaptation tolérés sont de plus en plus courts. Les gens se sentent sous pression et insécurisés par les exigences croissantes et la concurrence de plus en plus forte, régnant dans le monde du travail, surtout en Inde, second pays le plus peuplé du globe. Dans ce contexte, la concurrence commence dès le plus jeune âge et elle devient de plus en plus rude tout le long du cours du parcours éducatif. L'ancien système d'éducation indien utilisait la méditation et le yoga dans le but de favoriser l'équilibre des étudiants tout en soutenant le développement de leur plein potentiel. Le yoga et la méditation sont devenus très populaires dans le monde entier au cours des cinquante dernières années. En Inde, le ministère de la Santé et le ministère des Sciences et de la Technologie promeuvent les pratiques et la recherche sur ces méthodes.

L'objectif de cette thèse de doctorat est de mettre en évidence les effets de la méditation sur les élèves de l'enseignement secondaire, en Inde. Une attention particulière est accordée aux facteurs qui affectent le bien commun, tels que les attitudes envers l'environnement, et à ceux qui influencent le développement personnel, tels que le niveau d'anxiété scolaire et les performances académiques. En plus de l'épanouissement personnel, on examinera aussi le *changement social* déclenché par la méditation. Les données empiriques ont été construites quantitativement, au moyen d'une étude quasi

expérimentale, réalisée par conséquent dans un contexte organisationnel. Des informations qualitatives supplémentaires ont été utilisées pour l'évaluation.

La pratique de la méditation Sahaja Yoga est la variable indépendante ; les trois variables dépendantes de l'étude quantitative sont les attitudes environnementales (DV1-EA), l'indicateur d'anxiété académique (DV2-AP) et la performance académique (DV3-AP). Les pré et post-tests ont été effectués à l'aide d'échelles standard pour l'anxiété académique et les attitudes environnementales. La performance académique a été mesurée en utilisant la note moyenne des bulletins scolaires des étudiants. L'analyse des données quantitatives a été effectuée par des méthodes statistiques multivariées à l'aide du logiciel Statistical packages for the social sciences (SPSS) et de la méthode avancée ANCOVA. Les données qualitatives ont été tirées de journaux des expériences de méditation, tenus par des élèves participants aux séances, et des commentaires d'enseignants sur leurs observations.

La population testée provenait de dix écoles secondaires publiques du district d'East Godavari dans l'État d'Andhra Pradesh, en Inde. 400 étudiants (200 hommes et 200 femmes) ont été sélectionnés et répartis de manière aléatoire dans les groupes expérimental et contrôle de 200 étudiants chacun. Un programme structuré et guidé de méditation Sahaja Yoga : une session de 45 minutes par jour, six jours par semaine, pendant six mois pendant une demi-année (de juillet à décembre 2018), a servi d'intervention dans le groupe expérimental. L'intervention a été dirigée par des enseignants qualifiés qui ont également cumulé des années d'expérience dans la pratique de la méditation Sahaja Yoga. La méditation Sahaja Yoga est une tendance significative de l'approche traditionnelle de la méditation du Silent Mind.

L'analyse statistique a révélé des différences significatives, entre le groupe expérimental et celui contrôle, pour les trois variables dépendantes. L'intervention par la méditation Sahaja Yoga a donc provoqué des effets positifs significatifs sur les attitudes environnementales (DV1-EA ; 10,81% de changement positif), les niveaux d'anxiété académique (DV2-AA ; 19,78% de baisse), et de performance académique (DV3-AP 4,08%, amélioration). L'hypothèse interprétative suivante est émise sur la base des résultats observés : *la méditation qui suit le concept traditionnel de la méditation comme*

un état sans pensée (méditation Sahaja Yoga) surpasse les autres méthodes qui ne suivent pas le concept original de la méditation sans pensée. Les témoignages des élèves ont montré de manière très impressionnante la multitude de changements qu'ils ont observés sur eux-mêmes. Ces changements ont également été énoncés par leurs parents, enseignants et amis. Par exemple, ils ont perdu leurs peurs. Ils sont devenus plus confiants. Ils ont montré un meilleur comportement et ils disent avoir augmenté le nombre de leurs amis. En outre, dans certaines écoles, ils ont lancé des programmes et des projets de développement durable dans lesquels ils ont intégré des élèves de toute l'école. Le changement de comportement positif du groupe expérimental (GE) a exercé une influence sociale positive sur le groupe de contrôle (GC), qui a donc également connu une évolution positive. L'ampleur de l'influence a été démontrée par l'amélioration statistiquement significative des valeurs du groupe de contrôle (DV1-EA 0,98%, DV2-AA 3,76%, DV3-AP 0,39%). Le facteur d'influence du GE sur le GC a été donc d'environ 10% en ce qui concerne les attitudes environnementales et les performances scolaires et d'environ 20% en ce qui concerne la réduction de l'anxiété scolaire. Certaines des écoles participantes ont été tellement impressionnées par les résultats qu'elles ont continué le programme de méditation Sahaja Yoga dans l'ensemble de l'établissement. Plusieurs autres écoles ont également pris connaissance de ces effets et ont lancé des programmes de méditation dans leurs écoles. Les résultats de cette recherche peuvent aider les professionnels de l'éducation, les administrateurs, les concepteurs de programmes d'études et les décideurs à décider si la méditation doit ou non être officiellement incluse dans le programme d'études.

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List of Abbreviations

a.k.a.	also known as
AAS	Academic Anxiety Scale
ADD	Attention Deficit Disorder
ADHD	Attention Deficit Hyperactivity Disorder
ANCOVA	Analysis of Co-variance
ANOVA	Analysis of Variance
AP	Andhra Pradesh
approx.	approximately
AR	Academic Results
ASA	American Sociological Association
CG	Control Group
CPCB	Central Pollution Control Board
CSE	Centre for Science and Environment
DEO	District Educational Officer;
DEO	District Education Officer
DV1-EA	Dependent Variable1-Environmental Attitude
DV2-AA	Dependent Variable2-Academic Anxiety Scale
DV3-AP	Dependent Variable3- Academic Performance
e.g.	exempli gratia, meaning "for example"
EAS	Environmental Attitude Scale
EE	Environmental Education
EESD	Environmental Education for Sustainable Development
EG	Experimental Group
<i>et al.</i> ,	et alii, meaning "and others"
EU	European Union
GDP	Gross Domestic Product
i.e.	that is
ibid	in the same source
LO	Learning Outcomes
MAE	Meditation Adverse Events

MBCL	Mindfulness-based Compassionate Living
MBCT	Mindfulness-Based Cognitive Therapy
MBSR	Mindfulness-based Stress Reduction
MEO	Mandal Educational Officer
MM	Mindfulness Meditation
MSC	Mindfulness Self Compassion
MSW	Municipal Solid Waste
MSWM	Municipal Solid Waste Management
NCCIH	National Center for Complementary and Integrative Health
NCERT	National Council of Educational Research and Training
NCHS	National Center for Health Statistics
NFHS	National Family Health Survey
NITI	National Institution for Transforming India
No.	Number
non-veg.	non-vegetarian
OECD	Organisation for Economic Co-operation and Development
p.	page
PNS	Parasympathetic Nervous System
SAE	Serious Adverse Events
SCERT	State Council of Educational Research and Training
SCT	Social Cycle Theory
SDG	Sustainable Development Goals
SNS	Sympathetic Nervous System
SWM	Solid Waste Management
SYM	Sahaja Yoga Meditation
TM	Transcendental Meditation
UN	United Nations
UNESCO	The United Nations Educational, Scientific and Cultural Organization
USA	United States of America
veg.	vegetarian
viz.,	namely, in other words
WHO	World Health Organization
ZPHS	Zilla Parishat High School

Appendix I

Demographic Sheet

Please fill in the following information:

Name : _____

Gender : Male: _____ / Female: _____

Age : _____

Class : _____ Section : _____

School : _____

City : _____

Educational qualification of Parents: Father _____ Mother: _____

Occupation of Father: _____

Occupation of Mother: _____

Type of family : Nuclear _____ /Giant _____/Extended _____

Size of family : _____ (Total Members of the family)

Siblings Total : _____ Male: _____ Female: _____

Living with : Parents ___ / Grandparents ___ / Relatives ___ / Hostel ___

No. of dependents in the family : _____

Income of the family : _____

Type of House : Thatched ___ /Traditional ___ / Concrete ___ /Asbestos ___

Food habits : Veg ___ / Egg ___ / Non-veg _____

Status of house : Own ___ / Shared ___ / Rented _____

Caste : _____

Social Status : OC ___ / BC ___ / SC ___ / ST _____

Religion : Hindu ___ / Christian ___ / Islam ___ / Other _____

Appendix II

Environmental Attitude Scale

	Consumable Booklet of EAS-TH (English Version)
Dr. Haseen Taj (Bangalore)	

Please fill in these entries :	Date <input style="width: 40px;" type="text"/>
Name _____ Father's Name _____	
Date of Birth <input style="width: 40px;" type="text"/> Gender : Male <input type="checkbox"/> Female <input type="checkbox"/>	
Class Studying _____ Area : Urban <input type="checkbox"/> Rural <input type="checkbox"/>	
Educational Qualification _____ In Job : Designation _____ Institution _____	
School/College _____ City/Town _____	
Faculty : Arts <input type="checkbox"/> Science <input type="checkbox"/> Commerce <input type="checkbox"/> Technical <input type="checkbox"/>	

INSTRUCTIONS

On the following pages 61 statements regarding environment have been given. Read each statement carefully and decide your answer on Four point alternative, viz., **Strongly Agree**, **Agree**, **Disagree** and **Strongly Disagree**, and put a tick mark in the appropriate box of alternative which fully describes your thinking. Please do answer to all the 61 statements.

Your answers will be kept confidential.

Scoring Table

Page	Raw Score			Level Grade	Stanine Grade	Level of Environmental Attitude
	2	3	4			
Score						
Total Score						

Estd. 1938	☎:(0562) 2601080
H. P. Bhargava Book House	
LG-1 & 2, Nirmal Heights, Near Mental Hospital, Agra-282 007	

2 | Consumable Booklet of EAS-TH

Sr. No.	STATEMENTS	Strongly Agree	Agree	Dis-agree	Strongly Disagree	SCORE
1.	The use of fertilizers is essential to increase agricultural yield.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
2.	Over population leads to poverty.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
3.	Food additives are not hazardous to the health.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
4.	Family planning should be made mandatory to decrease population growth.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
5.	Cutting of forests is essential to increase agricultural yields.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
6.	Children are future investments; the more children a family has, the better for the country.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
7.	All are responsible for environmental pollution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
8.	More and more hydroelectric power stations should be built to meet the need of people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
9.	Developing countries should have more population in order to accelerate growth.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
10.	Education about local issues and environmental pollution should be made mandatory in schools.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
11.	Shop keepers should stop handing out plastic carry-bags.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
12.	More and more power stations should be built as a mark of human progress.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
13.	People who leave their picnic litters in parks should be fined.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
14.	There should be more wind mills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
15.	The construction of new ski-resorts should be forbidden.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
16.	Destruction to ozone layer will hardly affect the near future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
17.	Engine idling is inevitable though it wastes fuel and contributes to air pollution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
18.	Habitual meat eaters need not change their food habits, just to show mercy towards animals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
19.	Legislation on prevention of killing of animals are unwanted.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
20.	Possessors of more vehicles contributing to more air pollution should be punished.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
21.	High income groups who directly or indirectly account for most green house gas emission should be penalized.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
22.	It is a right of high level income groups to have high level of resource consumption and waste generation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>
Total Score Page 2						<input type="text"/>

Sr. No.	STATEMENTS	Strongly Agree	Agree	Dis-agree	Strongly Disagree	SCORE
23.	Protection of environment should be the sole responsibility of the governments and not of the individuals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
24.	Toxic wastes will not harm the human beings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
25.	Excessive energy consumers should be fined heavily.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
26.	All people need not be kind and compassionate towards animals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
27.	The large sums of money spent on environment pollution control could be put to better use on other things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
28.	Water pollution is not a serious problem because 80% of the world's surface is water.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
29.	Even a layman can do a lot to prevent pollution of environment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
30.	Parking fees should be made compulsory in places of work to those who commute by their personal vehicles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
31.	Higher gasoline prices should be charged to discourage the use of personal vehicles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
32.	Conservation of energy should be regarded as the responsibility of everyone.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
33.	The government should increase its revenue by clearing the forests.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
34.	Mining brings more benefits than problems to the local community.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
35.	Population control does not assure a reasonable standard of living for future generations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
36.	It is not necessary to spend money to clean the drainages, because any way that will be washed away by rain.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
37.	We are all responsible in one way or the other for the depletion of ozone layer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
38.	Aspiring for a better quality of life need not involve one's personal efforts to stem out the increasing toxification of earth.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
39.	The interests of the future generations should be sacrificed for luxurious life at present.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
40.	One should use energy resources, such as solar, which cause least pollution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
41.	The government should ban the use of plastic containers to reduce pollution of our surroundings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Total Score Page 3						<input type="text"/>

Sr. No.	STATEMENTS	Strongly Agree	Agree	Dis-agree	Strongly Disagree	SCORE
42.	People should be encouraged to ride bicycles and paddled bancas to prevent pollution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
43.	Solid wastes should be made to dispose only in the land fills or pits.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
44.	The government should reduce the tax paid by factories that possess anti pollution facilities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
45.	The explosion of science and technology has lead to the poisonous effect on the environment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
46.	Over pollution of the environment can cause misery and sufferings to human beings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
47.	All the smoke belching vehicles should be removed from the roads.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
48.	Participation in afforestation programmes is a mere waste of time and energy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
49.	People having no concern for environmental protection should be penalised.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
50.	Environment is least affected though domestic garbage is dumped on the roadsides.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
51.	Conservation of resources is necessary for the sake of future generations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
52.	Pesticides should not be sprayed on vegetables.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
53.	Even the steep hill sides should not be left out of cultivation in order to increase the productivity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
54.	Excessive use of animals in laboratory experiments for testing medicines should be forbidden.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
55.	The effects of acid rain on our forests are still acceptable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
56.	It is not wrong to hunt animals for commercial purposes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
57.	One should participate in campaigns on "stop pollution".	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
58.	It is not wrong to hunt animals for food.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
59.	The industrial and toxic waste dumps located away from residential areas do not pose any safety risks.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
60.	Every individual should complain against waste dumping whether it is near to their residences or far.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
61.	Environmental pollution leads to health hazards.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Total Score Page 4						<input type="text"/>

Appendix III

Academic Anxiety Scale

	Consumable Booklet of AAS-SAMRUA (English Version)
Dr. Mohd. Abid Siddiqui (Aligarh) Dr. Atieq Ul Rehman (Jammu)	

Kindly fill in the following entries : Dated

Name _____

Father's Name _____

Date of Birth Gender : Male Female

Class _____ Section _____ Area : Urban Rural

Faculty : Arts Science Commerce Technical

School/Institution _____ Place _____

INSTRUCTIONS

On the following pages 44 statements have been presented. Read each statement carefully and decide your answer on three option, viz., *Agree*, *Undecided* and *Disagree* and put a mark in the appropriate cell which describes your answer the best.

Please answer to all the 44 statements.

Be assured that your answers will be kept confidential.

Scoring Table

	Raw Score			z-Score	Grade	Level of Academic Anxiety
Page	2	3	4			
Score						
Total	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

Estd. 1938	☎:(0562) 2601080
H. P. Bhargava Book House	
LG-1 & 2, Nirmal Heights, Near Mental Hospital, Agra-282 007	

Sr.No.	STATEMENTS	Agree	Un- Decided	Dis- agree	SCORE
1.	I easily get irritated when asked by my parents about studies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
2.	People tell me that I worry too much.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
3.	I am unable to relax due to pressure of the study.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
4.	Most of my classmates consider me a weak student.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
5.	I always prefer to be friend with good students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
6.	I have the habit of focusing on the task in hand.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
7.	I enjoy a very healthy and happy life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
8.	I find it difficult to remember the course content.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
9.	I get tired even with little study.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
10.	I do not have interest in my study.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
11.	I am unable to relate different concepts easily.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
12.	I am able to concentrate for too long in my studies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
13.	I always consult text books of different subjects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
14.	During teaching learning process, I concentrate on developing my knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
15.	I repeatedly dreamt of difficult subjects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
16.	The most difficult task in life is to study.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Total Score Page 2					<input type="text"/>

Sr.No.	STATEMENTS	Agree	Un- Decided	Dis- agree	SCORE
17.	I do not have interest in subjects which I have chosen.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>
18.	If provided an opportunity, I would prefer study than anything else.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
19.	I often visit my school library to consult books related to my subjects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
20.	Teachers always criticize me in the classroom.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>
21.	I do not like to participate in debates, essay writing competitions and other academic activities organized in the school.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>
22.	I never discuss school day experiences with my parents.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>
23.	School is the most boring place to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>
24.	Student life is the best life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
25.	School is the best place to make friends.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
26.	All my classmates pay due regard to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
27.	My efforts are not encouraged by my teachers.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>
28.	I feel worried, when the teacher enters in the classroom.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>
29.	I am afraid of the teachers because they humiliate me in front of my classmates.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>
30.	I avoid sitting on the first bench in the classroom.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>
Total Score Page 3					<input type="text"/>

Sr.No.	STATEMENTS	Agree	Un- Decided	Dis- agree	SCORE
31.	I do not like to ask anything with my teachers related to problems / difficulties.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
32.	Teachers hardly motivate me in my study.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
33.	Teachers of my class are very friendly and sympathetic in nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
34.	Free periods are waste of time in school.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
35.	Our Principal is very nice and decent person.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
36.	I have uneasy and upset feelings before appearing in final exam.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
37.	During tests, I find myself thinking of the consequences of failing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
38.	Usually, my mind goes blank in examination room.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
39.	Unwanted thoughts come to my mind in examination room.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
40.	I get many bad dreams during examination period.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
41.	I often experience and feel like going to the washroom in examination room.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
42.	Our education system should be free from all kinds of examinations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
43.	My mind works quite well in the examination hall.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
44.	I am able to solve all questions quite comfortably in the examination.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Total Score Page 4					<input type="text"/>

Appendix IV

Raw Data

S.No.	EG1 CG2	DV1-EA Pre	DV1-EA Post	DV2-AA Pre	DV2-AA Post	DV3-AP Pre	DV3-AP Post
1	1	193	202	82	73	73	75
2	1	136	162	105	66	46	49
3	1	197	204	70	60	77	80
4	1	203	210	60	52	97	98
5	1	151	183	82	78	64	67
6	1	190	201	105	49	91	93
7	1	130	154	70	88	51	59
8	1	157	179	60	63	69	72
9	1	173	195	95	86	59	64
10	1	142	163	65	95	42	43
11	1	169	197	108	72	66	69
12	1	182	201	88	65	71	75
13	1	146	188	100	74	65	69
14	1	186	198	109	53	83	85
15	1	172	194	90	54	70	75
16	1	177	196	80	62	72	76
17	1	139	161	93	90	49	56
18	1	153	184	66	75	56	62
19	1	199	206	77	74	77	82
20	1	183	200	79	59	74	84
21	1	152	187	104	77	59	62
22	1	137	159	91	91	55	57
23	1	164	195	81	59	63	66
24	1	170	191	71	61	67	70
25	1	132	155	99	95	44	51
26	1	187	201	102	53	88	90
27	1	163	195	70	89	51	56
28	1	198	204	88	63	73	75
29	1	179	198	110	72	76	80
30	1	169	193	67	66	69	72
31	1	140	173	103	79	58	62
32	1	173	196	74	67	64	65
33	1	189	200	80	51	94	95
34	1	149	168	78	90	47	50
35	1	199	206	95	57	70	74

36	1	201	207	73	49	98	98
37	1	196	205	64	60	74	75
38	1	173	195	104	76	62	65
39	1	143	163	82	77	58	61
40	1	168	193	61	75	67	71
41	1	192	203	71	64	75	76
42	1	189	201	92	58	94	95
43	1	144	162	93	90	50	53
44	1	172	197	90	62	68	70
45	1	202	209	71	48	97	98
46	1	167	198	65	85	62	65
47	1	149	166	104	81	59	61
48	1	195	204	77	55	75	77
49	1	138	159	60	86	53	56
50	1	155	183	100	60	69	72
51	1	185	194	91	54	82	86
52	1	159	191	72	73	63	68
53	1	162	179	102	91	52	57
54	1	175	197	77	63	75	77
55	1	141	163	66	95	43	48
56	1	173	194	86	61	70	73
57	1	155	181	108	82	59	61
58	1	166	196	72	72	63	65
59	1	197	206	109	57	93	94
60	1	131	152	76	80	56	57
61	1	145	162	95	74	57	61
62	1	174	185	90	72	77	82
63	1	204	211	67	49	85	86
64	1	148	177	98	94	45	51
65	1	170	191	104	76	69	72
66	1	139	160	81	80	54	57
67	1	195	204	68	59	75	80
68	1	169	187	112	60	77	81
69	1	172	189	90	87	60	72
70	1	188	199	106	75	72	76
71	1	183	194	80	62	83	86
72	1	165	192	81	77	68	73
73	1	198	204	100	53	82	85
74	1	174	199	84	58	73	75
75	1	189	195	70	52	98	98
76	1	167	188	93	68	61	67
77	1	167	179	66	73	64	68

78	1	134	153	79	88	55	67
79	1	142	162	62	57	59	65
80	1	194	205	97	76	70	73
81	1	182	193	89	61	81	85
82	1	135	155	105	94	42	47
83	1	193	205	99	47	95	95
84	1	179	196	85	67	77	79
85	1	139	159	77	86	47	54
86	1	162	193	111	61	56	59
87	1	155	173	61	77	62	66
88	1	142	161	80	88	50	56
89	1	169	180	107	76	70	74
90	1	179	192	82	73	71	76
91	1	196	202	99	51	90	91
92	1	181	193	108	60	82	85
93	1	204	210	95	54	97	97
94	1	172	195	97	72	76	78
95	1	161	196	68	60	57	61
96	1	136	166	77	75	46	55
97	1	154	176	67	65	75	77
98	1	167	188	85	79	67	73
99	1	198	206	100	53	92	93
100	1	176	184	105	78	72	76
101	1	174	182	83	77	70	72
102	1	145	162	94	80	49	53
103	1	199	206	69	55	98	98
104	1	183	199	93	52	85	87
105	1	190	201	90	48	94	95
106	1	181	194	107	62	79	80
107	1	198	205	61	54	88	90
108	1	142	163	69	86	58	61
109	1	164	181	65	88	51	57
110	1	159	180	76	89	65	66
111	1	168	186	66	80	69	72
112	1	136	159	108	94	43	48
113	1	175	186	104	64	74	75
114	1	171	190	100	76	69	69
115	1	133	154	99	60	48	53
116	1	169	183	110	75	72	74
117	1	203	211	83	65	87	88
118	1	159	191	99	79	61	64
119	1	174	186	81	60	77	79

120	1	196	205	94	63	74	82
121	1	183	194	77	59	83	87
122	1	134	153	96	93	44	53
123	1	173	195	78	77	68	72
124	1	202	208	85	49	94	95
125	1	167	189	73	87	65	69
126	1	191	200	110	65	72	75
127	1	183	194	98	64	85	89
128	1	187	199	65	60	79	83
129	1	186	197	106	72	78	84
130	1	139	168	90	76	69	74
131	1	144	158	76	76	68	73
132	1	189	201	78	55	99	99
133	1	194	201	80	75	74	76
134	1	176	198	99	54	93	94
135	1	165	177	104	65	82	85
136	1	167	186	62	58	87	91
137	1	149	166	90	72	59	67
138	1	184	198	67	53	95	96
139	1	200	206	79	48	99	99
140	1	136	155	71	74	65	73
141	1	190	201	101	88	55	63
142	1	159	192	68	61	79	88
143	1	168	187	63	86	74	79
144	1	177	199	98	62	82	87
145	1	181	196	108	60	76	82
146	1	173	194	85	59	79	83
147	1	196	204	107	63	93	95
148	1	167	178	80	77	64	73
149	1	142	161	84	88	45	55
150	1	163	191	83	58	77	81
151	1	132	164	70	73	54	61
152	1	201	210	95	58	98	98
153	1	145	172	115	75	61	67
154	1	164	192	85	72	72	75
155	1	193	203	106	51	83	85
156	1	193	204	70	62	86	91
157	1	157	184	99	86	55	64
158	1	133	154	93	87	47	55
159	1	138	157	79	94	45	59
160	1	169	190	77	61	82	86
161	1	176	200	101	63	78	82

162	1	173	184	111	90	59	66
163	1	141	160	114	89	63	69
164	1	179	192	84	53	81	89
165	1	181	200	70	74	73	81
166	1	195	206	106	47	97	98
167	1	187	198	100	60	83	91
168	1	159	191	82	59	77	79
169	1	167	188	95	55	89	93
170	1	179	193	70	80	70	82
171	1	204	210	84	51	92	96
172	1	168	179	85	77	64	74
173	1	156	187	67	75	55	69
174	1	150	183	96	73	69	77
175	1	197	205	69	52	93	95
176	1	170	186	99	60	82	92
177	1	144	163	107	79	51	63
178	1	166	174	98	74	69	74
179	1	188	199	63	68	83	85
180	1	136	158	85	95	48	53
181	1	177	195	108	65	76	79
182	1	194	205	99	51	94	95
183	1	168	175	85	87	57	63
184	1	153	179	112	73	62	67
185	1	167	189	81	47	69	73
186	1	202	211	65	59	96	96
187	1	199	206	101	60	73	75
188	1	198	206	96	55	91	93
189	1	138	165	90	89	51	61
190	1	187	198	63	69	77	81
191	1	176	193	73	73	63	69
192	1	133	163	67	88	44	49
193	1	169	191	105	72	81	83
194	1	163	187	80	74	59	65
195	1	200	211	90	56	86	88
196	1	176	195	107	74	70	73
197	1	132	153	97	64	54	57
198	1	178	199	99	75	74	77
199	1	188	200	66	59	71	78
200	1	175	196	93	63	73	82
201	2	166	168	104	75	72	73
202	2	134	135	81	101	47	48
203	2	182	183	72	70	78	77

204	2	173	173	79	68	85	85
205	2	192	192	77	90	62	63
206	2	191	193	106	64	93	90
207	2	180	181	72	89	64	65
208	2	132	135	68	88	68	69
209	2	191	190	91	95	50	50
210	2	149	151	65	100	42	43
211	2	196	198	90	69	68	69
212	2	192	193	88	72	70	70
213	2	138	141	97	99	50	51
214	2	197	199	110	61	96	95
215	2	152	154	69	79	72	70
216	2	173	175	74	90	69	70
217	2	149	151	102	90	60	61
218	2	167	168	62	70	75	74
219	2	163	165	80	83	78	79
220	2	152	153	99	100	55	56
221	2	168	169	94	90	62	63
222	2	189	191	71	99	57	58
223	2	140	142	83	98	46	45
224	2	188	189	106	65	87	88
225	2	180	184	91	70	68	67
226	2	144	146	102	98	50	52
227	2	164	166	107	87	60	61
228	2	178	179	67	73	77	75
229	2	199	200	70	60	98	98
230	2	166	166	101	90	60	61
231	2	194	195	89	69	72	70
232	2	171	173	74	72	70	71
233	2	132	135	60	100	48	50
234	2	173	172	91	86	67	65
235	2	187	188	72	63	82	81
236	2	186	187	79	79	75	76
237	2	172	175	105	76	71	71
238	2	140	143	88	97	58	60
239	2	153	155	64	95	59	59
240	2	169	173	81	90	60	61
241	2	157	159	77	95	54	55
242	2	166	167	98	76	74	75
243	2	197	200	95	75	75	75
244	2	155	156	93	75	61	62
245	2	145	146	100	93	57	58

246	2	144	147	80	91	61	60
247	2	173	175	78	85	62	63
248	2	196	200	75	63	85	80
249	2	200	199	94	67	93	94
250	2	131	133	92	99	45	46
251	2	176	177	89	97	50	51
252	2	161	163	69	80	69	70
253	2	190	191	68	65	93	91
254	2	134	136	110	92	51	52
255	2	166	166	105	82	68	68
256	2	172	173	81	80	71	70
257	2	154	155	66	98	60	61
258	2	194	195	96	60	97	97
259	2	187	187	87	75	73	74
260	2	160	163	80	100	60	61
261	2	194	195	102	78	83	80
262	2	143	145	60	93	78	80
263	2	131	132	78	101	44	45
264	2	168	169	103	99	57	59
265	2	191	195	79	73	86	85
266	2	169	169	94	98	64	65
267	2	145	147	110	97	49	50
268	2	173	175	105	99	67	66
269	2	169	181	74	80	74	75
270	2	144	146	103	97	52	53
271	2	170	173	105	79	72	71
272	2	186	186	106	65	89	90
273	2	173	173	80	100	69	70
274	2	199	200	99	63	96	95
275	2	170	172	82	95	61	63
276	2	197	198	67	67	87	85
277	2	140	145	105	99	54	57
278	2	164	165	62	97	59	60
279	2	179	182	97	94	78	78
280	2	192	193	66	65	84	85
281	2	181	183	106	73	81	81
282	2	198	199	100	66	92	90
283	2	143	145	95	100	54	55
284	2	173	175	68	80	79	78
285	2	194	195	79	60	97	95
286	2	160	163	65	97	59	62
287	2	164	166	102	99	63	65

288	2	158	159	81	91	67	67
289	2	200	201	63	82	72	73
290	2	190	192	98	84	73	73
291	2	154	153	100	97	50	51
292	2	190	191	93	65	93	90
293	2	150	150	83	74	76	79
294	2	137	139	85	100	45	49
295	2	184	185	105	77	83	81
296	2	185	186	66	63	88	89
297	2	144	145	78	94	58	60
298	2	175	175	112	89	69	65
299	2	135	139	78	99	47	48
300	2	168	169	70	94	69	70
301	2	147	148	99	96	59	59
302	2	161	163	94	96	61	60
304	2	178	179	106	73	73	75
304	2	167	168	99	94	68	69
305	2	155	156	99	99	57	59
306	2	170	172	97	79	69	70
307	2	197	198	75	63	94	90
308	2	189	190	99	60	74	75
309	2	152	153	105	92	59	59
310	2	174	175	80	75	72	72
311	2	135	136	64	98	47	48
312	2	165	166	62	82	67	68
313	2	188	188	104	80	79	79
314	2	182	185	77	73	72	73
315	2	168	169	110	95	62	63
316	2	191	194	90	63	90	90
317	2	199	203	80	59	98	97
318	2	183	186	78	69	76	77
319	2	182	181	96	99	58	59
320	2	160	161	69	94	65	65
321	2	166	167	61	75	75	76
322	2	194	194	71	80	91	92
323	2	145	146	106	97	57	58
324	2	190	192	93	60	99	98
325	2	175	175	75	71	82	83
326	2	183	184	81	73	71	72
327	2	193	199	105	74	78	78
328	2	140	141	61	98	67	69
329	2	177	173	72	96	70	70

330	2	168	169	77	88	71	72
331	2	181	182	73	61	93	90
332	2	139	142	100	99	43	45
333	2	185	186	99	73	79	80
334	2	193	195	90	62	92	92
335	2	172	175	64	96	57	59
336	2	174	175	110	92	74	73
337	2	131	136	74	88	75	75
338	2	161	163	66	90	70	72
339	2	192	192	102	67	93	92
340	2	149	151	94	97	45	47
341	2	191	192	92	70	82	83
342	2	160	160	92	95	55	56
343	2	176	176	69	80	75	74
344	2	167	168	113	94	59	61
345	2	135	139	70	95	69	67
346	2	180	182	97	76	83	84
347	2	174	176	80	77	74	75
348	2	166	167	99	83	69	69
349	2	190	191	96	62	97	93
350	2	180	182	77	83	69	72
351	2	142	145	79	91	70	71
352	2	196	196	89	66	95	95
353	2	146	149	63	99	59	63
354	2	160	163	84	97	57	59
355	2	190	190	97	72	81	80
356	2	135	136	67	74	78	78
357	2	140	141	102	99	52	54
358	2	188	191	105	80	81	82
359	2	159	161	78	95	67	66
360	2	202	203	79	60	97	98
361	2	176	178	108	97	72	71
362	2	152	153	80	99	52	53
363	2	161	163	96	76	64	66
364	2	181	181	62	69	90	87
365	2	169	172	98	98	65	67
366	2	170	173	107	81	74	75
367	2	145	146	77	99	53	54
368	2	175	175	70	93	72	70
369	2	172	176	101	84	73	72
370	2	139	141	83	91	44	46
371	2	194	195	105	64	93	90

372	2	171	174	99	93	75	76
373	2	194	193	85	62	93	91
374	2	157	158	114	99	55	59
375	2	180	183	68	81	82	83
376	2	195	196	95	77	80	82
377	2	144	145	69	74	81	83
378	2	166	167	107	97	69	69
379	2	167	170	84	89	73	71
380	2	198	199	78	76	88	89
381	2	152	156	79	90	52	55
382	2	188	189	100	78	83	83
383	2	176	179	90	75	78	78
384	2	135	139	80	96	45	46
385	2	186	189	108	91	84	85
386	2	178	179	79	93	72	73
387	2	200	199	80	67	91	90
388	2	166	169	112	92	68	69
389	2	140	141	92	100	54	55
390	2	190	192	99	90	72	71
391	2	175	177	70	81	75	75
392	2	164	168	95	86	59	61
393	2	201	202	106	66	94	93
394	2	176	179	95	79	77	78
395	2	199	200	82	61	96	95
396	2	187	189	100	68	85	86
397	2	167	171	67	94	67	68
398	2	168	173	84	93	55	57
399	2	175	176	61	85	75	77
400	2	174	175	69	87	71	73

Appendix V

Permission letter from District Education Officer

PROCEEDINGS OF THE DISTRICT EDUCATIONAL OFFICER, EAST GODAVARI,
KAKINADA

Present: Sri S.Abraham, M.A., M.A. Ed.,

L.Dis.No.1905-C7/2018,

Dated.06.07.2018

Sub: School Education - East Godavari District - Conduct of Meditation Classes of half an hour for six months to a selected group of students from each school from sample of 10 Schools in East Godavari District in respect of Smt.G.Manju, Ph.D Scholar, D/o G.Ramachandra Rao, Gerlivari Street, Razole - Orders issued - Regarding

Ref: 1. Lr.Re.No.Nil, dated 20.03.2018 of Smt.G.Manju, Ph.D Scholar, D/o G.Ramachandra Rao, Gerlivari Street, Razole

In view of the representation received in the reference cited, the District Educational Officer, East Godavari, Kakinada is hereby permitted Smt.G.Manju, Ph.D Scholar, D/o G.Ramachandra Rao, Gerlivari Street, Razole to conduct Meditation Classes for half an hour for six months to a selected group of students from each school from sample of 10 to 20 Schools in East Godavari District without disturbing the normal classes and without any financial commitment and without any problems from any corner.

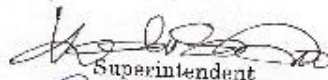
The Headmasters concerned are requested to allow the above individual to conduct Meditation Classes for half an hour for six months in the respective schools without any disturbance to school hours.

The receipt of these proceedings should be acknowledged.

Sd/- S.Abraham,
District Educational Officer,
East Godavari, Kakinada

To
Smt.G.Manju, Ph.D Scholar, D/o G.Ramachandra Rao, Gerlivari Street, Razole
Copy to the Headmasters concerned

// t.c.f.b.o. //


Superintendent

Appendix VI

Use Of The Elements In Sahaja Yoga Meditation

EARTH

- Balancing the 1st Center
- watch the grass
- sit on the earth
- Balancing the left side



FIRE use fire only on / for the left side!!!

- candeling
- during meditation
- clear the eyes



- outside:

- 3 - candle treatment
- up and down the left channel
- in front of a energy center
- on the fingers of the left hand



WATER / ICE



• Icepack



cools the right channel



• Footsoak



clears all

AIR – BREATHING TECHNIQUES

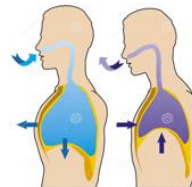
- help the right side
- and the 4th center (heart)

Each exercise can be done separately and has to be repeated several times.

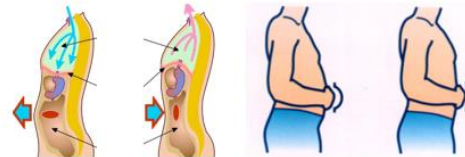
- I**
- pay attention to your breathing
 - gently take a few deep breaths
 - place right hand on the heart center



- II**
- inhale left, pause, exhale right, pause (repeat)
 - inhale right, pause, exhale left, pause (repeat)
 - inhale both, pause, exhale both, pause (repeat)



A Inhale in the lungs, pause, exhale, pause



B Inhale in the stomach, pause, exhale, pause



SKY/ETHER

- **Balancing the right side**

"Inner Energy, please remove all the imbalances of my right side into the ether / sky."



- **watch the sky**



Appendix VII

Example For A Typical Sahaja Yoga Meditation

1. Attention exercise (before and after meditation)

Move your left hand upwards - the right hand wraps around the left hand (arrow direction) and make a "knot" over the head – Repeat this 3 times; make three knots at the 3rd time.



Move your right hand from the left side over the head to the right and back - "like a rainbow" – Repeat this 7 times.

Your attention should be on your right hand (Advanced: over the head).



2. Balancing the channels - Close your eyes, put the attention inside



1 Both hands on the earth



2 Right hand on the earth
Cleansing of the left channel



3 Left hand to the sky
Cleansing of the right channel



3. Initiation of the meditation

- lift your right hand over the middle, to the head
- follow with your attention

4. Meditation

- Keep both palms of the hands open to the sky
- Do not think
- Attention is over the head and on the hands
- you can also put one hand on a special energy point
- When you become restless (begin to think): lift your right hand over your head again (3)



5. Closing of the meditation - Attention exercise like in 1.

Nom de la doctorante : Manju Gundumogula

Directeur de thèse : Prof. Jean Marie Seca

Département : Sociologie

Centre de recherche : Laboratoire Lorrain de Sciences Sociales (2L2S : <http://2l2s.univ-lorraine.fr/>)

École doctorale : Sociétés, Langages, Temps, Connaissances (SLTC : <http://doctorat.univ-lorraine.fr/fr/les-ecoles-doctorales/sltc/presentation>)

Date de la soutenance (en ligne) : 16 décembre 2021

Titre de la thèse de doctorat en sociologie : *Recherche sur la méditation Sahaja Yoga : Une approche quasi-expérimentale de son effet sur les attitudes environnementales, l'anxiété académique et les performances d'élèves du Secondaire*

Résumé

L'appréciation croissante de la méditation, du yoga et des méthodes alternatives pour la santé mentale, émotionnelle et physique est un phénomène sociologique. L'objectif de la présente étude est de découvrir l'effet de la méditation Sahaja Yoga sur les attitudes environnementales, l'anxiété académique, et la performance scolaire des élèves d'établissements du Secondaire, en Inde. La principale enquête de cette thèse est de type quasi-expérimentale organisée à partir de pré et post-tests. Elle est donc principalement quantitative. Dans un environnement socioculturel indien, un large échantillon représentatif de 400 élèves (âge moyen de 14,2 ans), dont 200 de genre masculin et 200 de genre féminin, a été sélectionné dans dix établissements secondaires publics du district d'East Godavari dans l'État d'Andhra Pradesh en Inde. Tous les sujets ont été répartis au hasard en deux groupes : 200 dans le groupe expérimental et 200 dans le groupe contrôle. Le groupe expérimental a bénéficié d'une intervention de méditation de Sahaja Yoga pendant six mois. La pratique de la méditation Sahaja Yoga est considérée comme une variable indépendante et les attitudes environnementales, l'anxiété académique et la performance scolaire comme des variables dépendantes. Pour déterminer l'effet de la méditation, une analyse de covariance (ANCOVA) a été réalisée. Les résultats ont montré des effets positifs significatifs sur les attitudes environnementales (10,81 % de changement positif), les niveaux d'anxiété académique (19,78 % de baisse) et les performances scolaires (4,08 % d'amélioration). Les données qualitatives provenant des journaux intimes des élèves et des commentaires des enseignants donnent un aperçu de la causalité qu'ils ont établie. Au cours de l'expérience, les élèves sont devenus des personnalités plus sûres d'elles-mêmes. Ils ont amélioré leur comportement social. Ils ont lancé des projets scolaires pour l'environnement. Ils ont développé plus d'intérêt et plus d'attirance sincère pour leurs études. On considère que le contexte socioculturel de l'Inde contribue à l'acceptation, à l'appréciation et à la bonne application de cette méthode dans l'environnement scolaire.

Introduction

Le monde dans lequel nous vivons est plein de défis. Notre époque se distingue vraiment des précédentes par le facteur temps et donc la vitesse à laquelle les changements y sont réalisés. L'évolution technologique y est exponentielle et combinatoire et elle progresse à des taux de doublement toujours plus rapides. Par conséquent, ces processus transforment notre façon de produire, de travailler et de vivre. Et ils entraînent des changements sociaux à une vitesse inimaginable auparavant. Les gens se sentent sous pression et insécurisés par les exigences croissantes et une concurrence grandissante dans le monde du travail. En tant qu'individus, soit nous devons nous adapter à des circonstances peu réjouissantes et les défis resteront et s'amplifieront, soit nous devons trouver des solutions pour les résoudre. Donc, soit notre esprit doit changer, soit le monde extérieur doit être modifié – rejoindre à la fois les deux objectifs peut sembler très difficile bien que cette conciliation s'impose comme nécessaire.

La méditation yogi est une technique connue depuis longtemps pour apporter un changement intérieur, une nature paisible et un esprit libre et équilibré plus performant. Elle permet de relier le monde intérieur au monde extérieur, et on dit qu'elle débloque les potentiels cachés d'un individu. En même temps, on doute et on nie que cette méditation apporte ces effets. Néanmoins, les pratiques de méditation de ce type jouissent d'une popularité croissante dans la pratique et la recherche.

Le système éducatif moderne met l'accent sur l'éducation fondée sur la connaissance, de telle sorte que d'autres compétences telles que les arts, la musique, les sports et la méditation, qui étaient autrefois considérées comme très importantes pour la formation du caractère, jouent désormais un rôle mineur, voire nul. Le gouvernement indien encourage de nos jours, à nouveau, l'utilisation et la recherche de pratiques de yoga et de méthodes de méditation afférentes. Depuis quelques temps déjà, de nombreux acteurs de la société indienne estiment qu'il serait bénéfique de redonner de l'importance à ces pratiques, car ils y voient un grand potentiel pour relever les défis du monde d'aujourd'hui.

Objectif de la présente étude

La présente étude doctorale vise à déterminer si la méditation Sahaja Yoga a un effet significatif sur les variables dépendantes sélectionnées avec les objectifs suivants :

- Évaluer l'attitude environnementale des élèves du Secondaire.
- Étudier l'effet de la méditation sur les attitudes environnementales des élèves du Secondaire.
- Évaluer l'anxiété académique des élèves d'établissements du Secondaire et connaître le niveau d'anxiété académique parmi ces élèves.
- Étudier l'effet de la méditation sur l'anxiété académique d'élèves du Secondaire.
- Étudier l'effet de la méditation sur les résultats scolaires d'élèves du Secondaire.
- Comparer l'anxiété académique des élèves du Secondaire méditatifs et non-méditatifs.
- Déterminer la relation entre l'anxiété académique et la performance scolaire d'élèves du Secondaire.

- Proposer des stratégies pour améliorer les résultats scolaires des élèves du Secondaire.
- Suggérer aux décideurs politiques indiens l'importance de la méditation par le yoga, au niveau des établissements du Secondaire.
- Suggérer l'importance et les possibilités d'inclure la méditation par le yoga dans les nouveaux cursus de formation indiens.

Hypothèses et attentes quant aux résultats possibles

H1 : On s'attend à une différence significative entre les mesures dans le groupe expérimental et celles dans le groupe contrôle concernant l'effet de la méditation yoga sur les attitudes environnementales des élèves du secondaire.

H2 : On s'attend à une différence significative entre les mesures dans le groupe expérimental et celles dans le groupe contrôle à propos de l'effet de la méditation yoga sur l'anxiété académique des élèves du Secondaire.

H3 : On s'attend à une différence significative entre les mesures dans le groupe expérimental et celles dans le groupe contrôle concernant l'effet de la méditation yoga sur les performances scolaires des élèves du Secondaire.

H4 : On s'attend à trouver une relation entre une variable dépendante et les deux autres variables dépendantes (corrélation multiple).

H4.1 : Il existe une relation entre les attitudes environnementales, l'anxiété et les résultats scolaires.

H4.2 : Une relation est envisagée entre l'anxiété académique, les attitudes environnementales et la performance scolaire.

H4.3 : Une relation est complémentaiement postulée entre la performance scolaire, les attitudes environnementales et l'anxiété académique.

H5 : On s'attend à une relation entre deux variables dépendantes après avoir contrôlé l'effet de la troisième variable dépendante (corrélation partielle).

H5.1 : Une relation est envisagée entre l'attitude environnementale et l'anxiété académique après avoir éliminé l'effet de la performance scolaire.

H5.2 : Une relation est postulée entre l'attitude environnementale et la performance scolaire après avoir éliminé l'effet de l'anxiété académique.

H5.3 : Une relation est pensée entre l'anxiété académique et la performance scolaire après avoir éliminé l'effet de l'attitude environnementale.

Méthodologie

Sujets : Les sujets de l'étude ont été sélectionnés dans dix établissements du Secondaire public, situés dans dix endroits différents du district d'East Godavari dans l'État d'Andhra Pradesh en Inde. Au total, 400 élèves de 9^e année (200 jeunes hommes et 200 jeunes femmes) ont été sélectionnés au hasard et répartis entre les groupes expérimental et témoin de 200 élèves chacun. L'âge moyen des élèves était de 14,2 ans.

Variables / Contenus sélectionnés : La pratique de la méditation Sahaja Yoga a été considérée comme variable indépendante. Les trois variables dépendantes de l'étude quantitative sont : Attitudes environnementales (DV1-EA), indicateur d'anxiété académique (DV2-AP) et performance scolaire (DV3-AP). Le questionnaire utilisé pour les attitudes environnementales (DV1-EA) est l'échelle d'attitude environnementale de Taj (EAS), développée par le Dr Haseen Taj ; pour l'anxiété académique (DV2-AP), a été appliquée l'échelle d'anxiété académique (AAS), créée par le Dr M. A. Siddiqui et le Dr A. U. Rehman. La validité des questionnaires dans les conditions de vie indiennes a été trouvée. Pour mesurer la performance scolaire (DV3-AP), les bulletins périodiques des élèves réalisés lors de leurs examens ont été collectés. Chaque bulletin récapitule les notes obtenues par l'élève dans chaque matière et le total ainsi que la moyenne des notes obtenues.

Collecte de données qualitatives : On a demandé aux élèves et aux enseignants de rédiger des témoignages sur leurs pratiques méditatives. Les élèves ont donné leur avis par écrit, sous la forme de journaux intimes. Les enseignants ont fourni leurs commentaires lors de leurs interactions avec l'auteur de cette thèse pendant les visites sur le terrain et pendant des conversations ; des prises de note détaillées de ces conversations ont été saisies et conservées.

Conception de la quasi-expérimentations : Le groupe expérimental a participé à la pratique de la méditation Sahaja Yoga (SYM). La SYM est un bon exemple de l'approche traditionnelle dite « de la méditation yoga de l'esprit silencieux ». La pratique du Sahaja Yoga a été pratiquée pendant une durée de 6 mois. Un programme structuré et guidé de méditation Sahaja Yoga a donc été appliqué : une session, impliquant 45 minutes de pratique quotidienne, six jours par semaine, pendant une demi-année (de juillet à décembre 2018), a servi d'intervention dans le groupe expérimental. L'intervention a été dirigée par des enseignants réguliers des lycées contactés. Ces derniers ont pu offrir une vraie qualification dans ce domaine, avec des années d'expérience dans la pratique de la méditation Sahaja Yoga.

Analyse statistique : Pour déterminer l'effet de la méditation Sahaja Yoga sur les variables dépendantes sélectionnées, une analyse de covariance (ANCOVA) a été utilisée avec l'aide du logiciel Statistical Package for the Social Science (SPSS 25).

Résultats de la présente étude

Résultats quantitatifs

Tableau 1. Statistiques descriptives du groupe expérimental et du groupe témoin dans le pré-test et le post-test pour chaque observation (DV1-EA, DV2-AA, DV3-AP)

Observations	Moyenne	Écart-type (SD)	Erreur standard de la moyenne (SEM)	Valeur minimale	Valeur maximale
Attitudes environnementales					
DV1-EA CG¹ Pre	170.16	19.44	1.37	131.00	202.00
DV1-EA EG Pre	170.01	20.87	1.48	130.00	204.00
DV1-EA CG Post	171.75	19.24	1.36	131.00	203.00
DV1-EA EG Post	187.52	16.28	1.15	152.00	211.00
Anxiété académique					
DV2-AA CG Pre	86.69	14.80	1.05	60.00	114.00
DV2-AA EG Pre	86.74	15.07	1.07	60.00	115.00
DV2-AA CG Post	83.38	12.94	0.92	59.00	101.00
DV2-AA EG Post	69.33	13.07	0.92	47.00	95.00
Performance scolaire					
DV3-AP CG Pre	70.55	14.24	1.01	42.00	99.00
DV3-AP EG Pre	70.55	14.82	1.05	42.00	99.00
DV3-AP CG Post	70.94	13.50	0.95	43.00	98.00
DV3-AP EG Post	74.63	13.55	0.96	43.00	99.00

¹ Les initiales CG se réfèrent à « groupe contrôle » ou « groupe témoin ». Le sigle EG dans la suite de ce texte symbolise la notion de groupe expérimental.

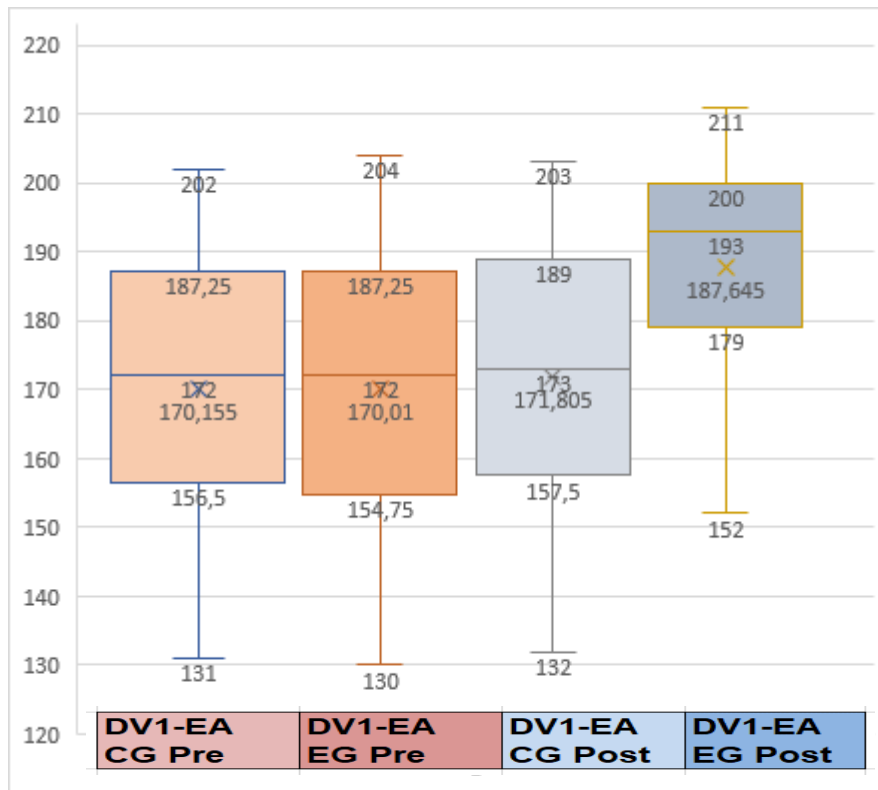


Figure 1: Diagramme de Boxplot pour les statistiques descriptives des Attitudes Environnementales (DV1-EA)

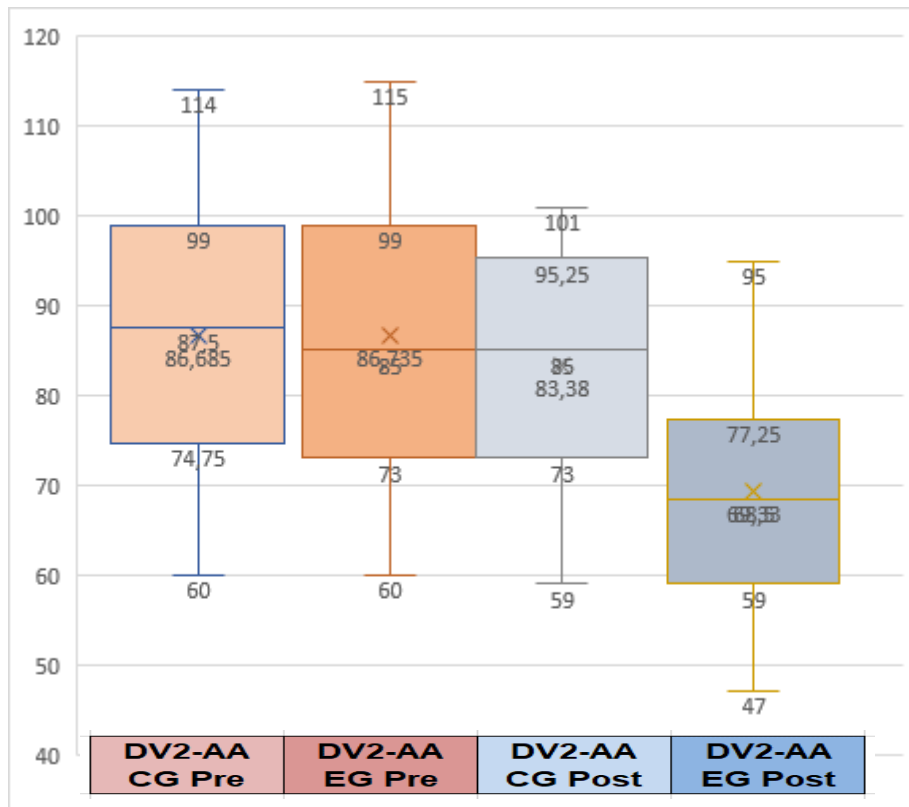


Figure 2: Diagramme de Box plot pour les statistiques descriptives de l'anxiété académique (DV2-AA)

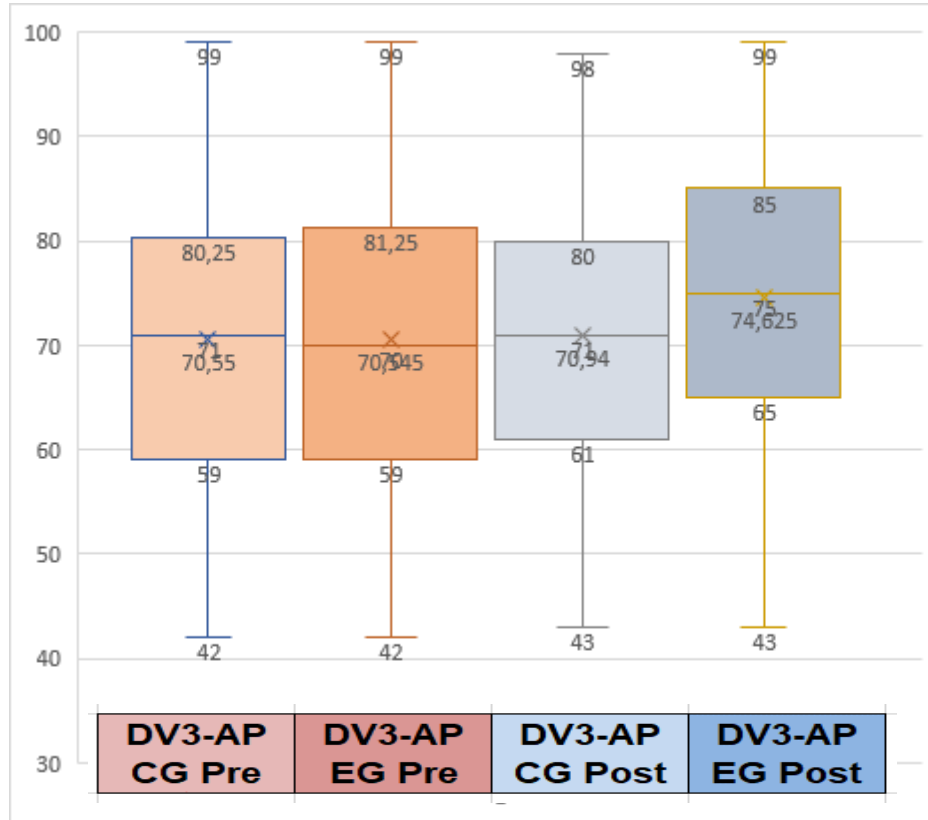


Figure 3: Diagramme de Boxplot pour les statistiques descriptives de la performance scolaire (DV3-AP)

Tableau 2. Analyse de covariance (ANCOVA) pour comparer les moyennes ajustées de EG et CG en matière d'attitude environnementale (DV1-EA)

Source de variation	Somme des carrés (SS)	Degré de liberté (ddl)	Carré moyen (MS)	Valeur de F	Valeur de significativité (SV) / p-value	ÉTA-carré partiel (PESQ)
Valeur du contraste (entre les groupes)	25482.12	1	25482.12	1107.41	0.000	0.736
Valeur de l'erreur (au sein des groupes)	9135.21	397	23.01			

Tableau 3. Analyse de covariance (ANCOVA) pour comparer les moyennes ajustées de EG et CG en matière d'anxiété académique (DV2-AA)

Source de variation	Somme des carrés (SS)	Degré de liberté (ddl)	Carré moyen (MS)	Valeur de F	Valeur de significativité (SV) / p-value	ÉTA-carré partiel (PESQ)
Valeur du contraste (entre les groupes)	19741.57	1	19741.57	116.44	0.000	0.227
Valeur de l'erreur (au sein des groupes)	67310.82	397	169.55			

Tableau 4. Analyse de covariance (ANCOVA) pour comparer les moyennes ajustées des EG et CG dans la performance scolaire (DV3-AP)

Source de variation	Somme des carrés (SS)	Degré de liberté (ddl)	Carré moyen (MS)	Valeur de F	Valeur de significativité (SV) / p-value	ÉTA-carré partiel (PESQ)
Valeur du contraste (entre les groupes)	1361.32	1	1361.32	351.97	0.000	0.470
Valeur de l'erreur (au sein des groupes)	1535.47	397	3.87			

Concernant l'attitude environnementale (DV1-EA), la valeur de F (1107.41) est jugée significative, car $p=0.000 < 0.05$. Cela prouve qu'il existe une différence significative entre les moyennes ajustées du groupe expérimental (EG) et du groupe contrôle (CG) et qu'un effet significatif de la méditation de Sahaja Yoga (SYM) a été trouvé dans cette recherche. La valeur partielle de l'ÉTA-carré (PESQ) trouvée est de 0,736. Cela signifie que 73,6% du changement dans les attitudes environnementales peuvent être expliqués par le traitement avec la méditation yoga.

Pour l'anxiété académique (DV2-AA), la valeur de F^2 (116,44) s'avère significative, car $p=0,000 < 0,05$. La valeur de l'ÉTA-carré partiel (PESQ) trouvée est de 0,227. Cela signifie que 22,7%

² Le test F donne une valeur du rapport entre les variances entre les groupes et les variances au sein du groupe. Si la valeur p calculée est faible, alors des relations significatives existent.

du changement dans l'anxiété académique peuvent être expliqués par le traitement avec la méditation yoga.

Pour la performance académique (DV3-AP), la valeur de F^3 (351,97) est jugée significative, car $p=0,000 < 0,05$. Cela prouve qu'il existe une différence significative entre les moyennes ajustées du groupe expérimental (EG) et du groupe contrôle (CG). Un effet significatif de la méditation Sahaja Yoga (SYM) sur la performance scolaire (DV3-AP) a donc été trouvé dans cette recherche. La valeur de l'ÉTA-carré partiel (PESQ) trouvée est de 0,470. Cela signifie que 47,0% du changement dans la performance scolaire peut être expliqué par le traitement avec la méditation.

Constatations qualitatives

L'évaluation qualitative a également montré que les effets de la méditation Sahaja Yoga ne se limitaient pas aux variables dépendantes étudiées. Les témoignages des élèves du groupe expérimental ont montré une multitude de changements qu'ils ont observés et énoncés sur eux-mêmes. Ces changements ont également été constatés par leurs parents, leurs enseignants et leurs amis. Par exemple, ils affirment avoir perdu leurs peurs. Ils sont devenus plus confiants. Ils se sont aussi mieux comportés en public et se sont fait des amis. Tous ces micro-changements ressentis signifient beaucoup pour eux, car la vie scolaire est une phase importante et probablement centrale de leur vie pour la plupart d'entre eux à cet âge. Les expériences scolaires désagréables peuvent être supportées pendant toute une vie. Donc, les transformer en expériences meilleures est un grand accomplissement dans le présent, qui peut avoir des effets positifs pendant toute une vie. Beaucoup ont dit que la méditation par le yoga a changé leur nature intérieure et que le monde extérieur a réagi différemment et plus positivement à leur égard du fait de cette transformation de leur intériorité. Ils estiment avoir trouvé un nouveau niveau de sincérité et de concentration. Leurs intérêts se sont déplacés vers des sujets plus profonds et ils ont amélioré leurs résultats scolaires. Ils pensent avoir découvert une appréciation de l'harmonie et de la paix dans leurs relations personnelles, et de nouvelles méthodes, parfois sans le savoir, pour les manifester en eux et autour d'eux. Ils ont acquis du respect et un sentiment de connexion avec la nature. Ces diverses auto-observations leur ont donné envie de faire quelque chose pour protéger et soutenir la nature et des initiatives scolaires ont donc été lancées par les élèves en termes environnementaux.

Discussion et conclusion

La quasi-expérience sous sa forme d'intervention en institution éducative a permis d'aborder plusieurs niveaux d'observation différents. L'intervention considérée a montré des effets au niveau individuel (effets mentaux, émotionnels et physiques) et sur le plan collectif (effets sur l'école, mesurés indirectement dans le groupe contrôle).

³ Le test F donne une valeur de rapport entre les variances entre les groupes et les variances au sein du groupe. Si la valeur p calculée est faible, alors des relations significatives existent.

D'autres résultats de recherche sur cette intervention socio-éducative illustrent le fait que les effets qualitatifs recueillis ne peuvent pas être classés comme des occurrences d'individus uniques ou dus à des biais du contexte de la recherche. En tant que tels, ils ne doivent donc pas être considérés comme des effets de variables non contrôlées. Ils doivent être évalués comme étant causés par l'intervention de pratique méditative par le yoga, bien que cela ne puisse être validé empiriquement et statistiquement, dans cette recherche, que pour les trois variables dépendantes mesurées.

On a constaté que la méditation Sahaja Yoga (SYM) a des effets positifs sur le système cardiovasculaire (cœur) (Yalta *et al.*, 2011). Elle a été considérée comme un outil efficace et suggérée comme thérapie complémentaire dans la gestion des maladies cardiovasculaires, du diabète et des troubles liés au stress (Manocha *et al.*, 2009 ; Rai *et al.*, 2010 ; Gupta *et al.*, 2015), la réduction de l'anxiété, le contrôle de la pression artérielle (Chung *et al.*, 2012 ; Sharma *et al.*, 2005), l'épilepsie (Panjwani, 2000), l'asthme (Manocha *et al.*, 2002), l'augmentation de la santé au travail (Manocha *et al.*, 2011) l'augmentation de la santé au travail (Manocha *et al.*, 2011), la meilleure santé fonctionnelle par rapport à la population générale en Australie (Manocha *et al.*, 2012), de meilleures capacités à modérer l'intensité de l'éveil émotionnel (Aftanas *et al.*, 2005), une meilleure qualité de vie et bien-être (Manocha *et al.*, 2012 ; Chung *et al.*, 2012), la stabilité émotionnelle (Cahn & Polich, 2006) et la privation de consommation de drogues (Hackl, 1995). La SYM a affecté, de manière significative, l'évaluation nutritionnelle (Chaudhary, 2011).

La recherche sur la méditation Sahaja Yoga a montré des améliorations significatives et de meilleures performances chez les élèves dans le domaine académique. Une étude expérimentale a révélé que les membres du groupe pratiquant la SYM bénéficient d'une amélioration significative de leurs capacités mnésiques (Rangan, Nagendra et Bhat, 2009). Il a été constaté que la SYM améliore la capacité d'équilibre dynamique des élèves (Rajak & Choudhary, 2016). Des études menées en Australie ont révélé l'influence positive de la SYM sur les enfants atteints de TDAH ou trouble/déficit de l'attention avec ou sans hyperactivité (Harrison *et al.*, 2003).

La santé mentale et la paix améliorent l'harmonie physique et émotionnelle dans et entre les individus (Rubia, 2009). Sergio Hernandez *et al.*, chercheurs en neurosciences, ont mesuré dans des études transversales une augmentation de 7% du volume de matière grise dans l'ensemble du cerveau chez les pratiquants de la SYM à long terme par rapport à un groupe contrôle similaire et en bonne santé (Hernandez *et al.*, 2016, 2020). L'état d'esprit silencieux pendant la méditation Sahaja Yoga a été surveillé par électroencéphalographie (EEG). L'EEG a montré une complexité réduite ainsi qu'un changement dans les régions de basse fréquence (Aftanas *et al.*, 2003 ; Ray *et al.*, 1985). Certaines régions du cerveau ont été identifiées comme étant corrélées à des fonctions cognitives spécifiques. Les fonctions exécutées plus souvent construisent une « meilleure infrastructure » dans le cerveau, de sorte qu'elles sont plus rapidement accessibles et plus développées que les autres. Une étude neurologique menée par Barros-Loscertales *et al.*, comparant 23 experts en médecine traditionnelle et

un groupe contrôle en bonne santé, a révélé que la médecine traditionnelle avait des connexions plus fortes dans les zones liées à l'attention et au contrôle, tandis que les zones liées au vagabondage de l'esprit étaient plus faibles, par rapport au groupe contrôle. De même, les zones liées au contrôle de soi y étaient plus fortes et les zones liées à l'impulsivité y étaient plus faibles chez les experts de la SYM par rapport au groupe contrôle sain (Barros-Loscertales *et al.*, 2021).

Schneider *et al.* ont constaté que la méditation Sahaja Yoga conduit à des décisions commerciales plus durables. Leurs expériences « se sont concentrées sur le développement d'une conscience sociale chez les managers qui encouragerait un comportement socialement responsable dans leurs décisions quotidiennes » (Schneider *et al.*, 2010, p. 36). Tommy Hendriks et ses collègues ont constaté la valorisation de sept forces caractéristiques par la SYM. Il s'agit du pardon, de la gratitude, de l'autorégulation et du travail d'équipe, qui sont perçues comme des qualités importantes dans le monde du travail (Hendriks *et al.*, 2021).

Dans la présente étude, une différence significative a été trouvée entre les moyennes ajustées du post-test du groupe expérimental et du groupe témoin en ce qui concerne les attitudes environnementales (DV1-EA), l'anxiété académique (DV2-AP) et la performance scolaire (DV3-AP). L'analyse de la corrélation entre les trois variables mesurées a montré que, dans tous les cas, il y avait une corrélation positive dans le sens d'un effet connoté positif. DV1-EA et DV3-AP ont augmenté et DV2-AP a diminué après l'intervention.

Les explications possibles des résultats de la présente étude sont que les changements dans les Attitudes environnementales (DV1-EA), l'Anxiété académique (DV2-AA) et la Performance scolaire (DV3-AP) ainsi que les effets qui ont été trouvés à partir des données qualitatives, pourraient être dus à une amélioration de la matière grise, une réduction de la complexité EEG, un meilleur contrôle de l'attention, moins de vagabondage de l'esprit, la relaxation du système nerveux sympathique et parasympathique, l'amélioration du système cardiovasculaire, l'évaluation nutritionnelle du corps, l'hypertension, l'asthme, les symptômes de la ménopause, la réduction et la gestion du stress, une meilleure stabilité émotionnelle, la santé mentale et la paix intérieure, l'augmentation de la puissance de la mémoire, un comportement plus durable, une conscience sociale plus élevée, etc.

D'un point de vue sociologique, on peut proposer le raisonnement suivant. La représentation sociale positive de la méditation Yoga en Inde est ancrée dans une vision du monde hors du siècle. Nos résultats doivent donc être considérés comme une conséquence de cette représentation sociale et de cette vision du monde, qui est soutenue par des structures de raisonnement émiques. Les élèves ont fait l'objet d'une attention particulière de la part des professeurs de méditation, qui, en raison de leur représentation socioculturelle positive de la méditation, ont cru en un meilleur résultat. Ces enseignants ont fait en sorte que leur prémisse inconsciente se concrétise dans leur style d'enseignement. En outre, ils ont peut-être propagé un système de croyance socioculturel non-

séculier, basé sur la croyance de la connectivité de l'homme et de son environnement. Le phénomène selon lequel des attentes plus élevées conduisent à une meilleure performance scolaire est connu sous le nom d'effet Pygmalion, étudié, il y a quelques dizaines d'années, par Rosenthal et Jacobson (1968). En outre, le fait que les élèves se sentent observés les incite à modifier leur comportement et à développer une plus grande productivité (effet Hawthorne : Mayo, 1945 ; Roetlisberger et Dickson, 1939). La raison pour laquelle cette recherche a montré des résultats plus élevés que d'autres recherches sur la méditation pourrait être due au type spécial de méditation utilisé, qui fait toujours référence à des croyances émiques comme l'importance de l'absence de pensée et la connexion des individus avec les éléments et leur environnement. Ce type de croyances est plus élevé et diffusé dans un pays non séculier comme l'Inde, alors que dans les pays plus laïques, elles sont en quelque sorte étrangères aux individus modernes orientés vers la science. En raison du contexte social différent des pays laïques, même la version séculière de la méditation yoga n'est pas aussi familière aux individus qu'elle ne l'a été dans le contexte de la recherche, en Inde. En raison de cette aliénation subliminale des méthodes, les résultats des pratiques de méditation les plus étudiées ne sont pas si impressionnants et sont au mieux considérés comme controversés dans la communauté scientifique.

En examinant de plus près les conditions et les circonstances de l'expérience analysée et en observant les conditions préalables et l'applicabilité de l'approche sociologique explicative à cette expérience, l'approche sociologique explicative esquissée s'est toutefois avérée incohérente. Ces limites sont discutées dans ce qui suit.

L'effet « Pygmalion dans la classe » décrit une hypothèse résultant d'une expérience menée à l'école Oak dans les classes 1 à 6, avec des enfants âgés de 6 à 12 ans (Rosenthal & Jacobson, 1968, p. 20). Rosenthal avait déjà mené des expériences avec des rats qui indiquaient que si le dresseur croyait aux meilleurs résultats de certains rats, ceux-ci trouvaient plus rapidement leur chemin dans un labyrinthe. Il voulait transposer cette expérience aux jeunes enfants et s'attendait à un meilleur développement intellectuel de l'enfant si l'on disait à l'avance aux enseignants que certains enfants avaient un quotient intellectuel très élevé, mais que cette information était inventée et non basée sur la vérité d'une authentique mesure et que les enfants étaient choisis au hasard comme groupe expérimental. Dans l'expérience de Rosenthal, les résultats différaient de ceux des expériences sur les rats. Seules deux classes ont montré l'effet attendu - les enfants des classes 1 et 2 (âgés de 6 à 8 ans) ont montré de grandes différences entre le groupe expérimental et le groupe témoin. Rosenthal a donné six explications possibles qui différaient dans leur raisonnement. L'une d'entre elles considérait que seuls les jeunes enfants étaient susceptibles d'être influencés par la société ; l'autre que seuls les enseignants qui ne connaissaient pas les enfants étaient susceptibles d'être influencés par les informations erronées sur leur prétendu quotient intellectuel plus élevé. Ils ont également envisagé la possibilité que les enfants plus jeunes soient plus malléables, que les enseignants soient plus malléables lorsque les enfants sont plus jeunes, parce qu'ils ne connaissent pas les enfants depuis longtemps, et enfin que les enseignants puissent simplement croire que les plus jeunes sont plus

malléables. En outre, les erreurs d'échantillonnage dans l'échantillon d'enfants ou d'enseignants de cette classe respectée ont été considérées comme la cause des seuls effets montrés dans cette expérience, car il y avait des indications que les enseignants respectés des classes 1 et 2 étaient complètement ouverts et nouveaux. Une expérience similaire, menée par Clifford Pitt (1956), dans laquelle les enseignants connaissaient les enfants déjà deux mois avant l'expérience, n'a montré aucun effet. L'expérience de Charles Flowers (1966), avec des élèves de septième année évalués par de nombreux enseignants, n'a pas non plus donné les résultats escomptés.

Dans le cas de notre recherche expérimentale avec des élèves de 9^e année, aucune des circonstances qui justifieraient un « effet Pygmalion » ne s'applique. Au contraire, l'âge relativement avancé des élèves (14-16 ans) indique que les élèves ne répondront pas par une performance supérieure à une éventuelle influence subliminale supérieure de la part de l'enseignant. Les professeurs de méditation connaissaient déjà les classes avant cette expérience et ne seront donc pas impressionnés par une expérience de méditation yoga lors de leur évaluation professionnelle des élèves. De plus, une grande partie des notes provient des enseignants des matières correspondantes non impliquées dans l'expérience.

En psychologie industrielle et organisationnelle, l'effet Hawthorne est connu après les célèbres expériences de Fritz Roethlisberger et William Dickson, à l'usine Western Electric de Cicero, la Hawthorne Works, près de Chicago, de 1924 à 1932. L'entreprise avait commandé une étude qui établissait un lien entre la productivité du travail et l'amélioration des conditions de travail. Les expériences les plus célèbres sont celles qui ont observé l'influence de différentes conditions d'éclairage sur la productivité du travail. Les premières expériences avec une situation d'éclairage améliorée ont augmenté la productivité. Mais, de manière surprenante, la situation expérimentale avec un éclairage plus faible, à la lumière d'une bougie, a également entraîné une augmentation de la productivité. De même, lorsque les pauses des travailleurs étaient réduites et que la journée de travail était allongée, leur productivité augmentait. La conclusion tirée par Elton Mayo, professeur à la Graduate School of Business Administration de l'université de Harvard, selon laquelle le fait de recevoir de l'attention dans une situation expérimentale peut être à l'origine des effets observés et non de l'intervention expérimentale, est devenue célèbre, notamment du côté des employeurs, qui ont conclu que les travailleurs n'avaient pas besoin d'une amélioration (coûteuse) des conditions de travail, mais de plus de contrôle pour améliorer la productivité. La conclusion Hawthorne de Mayo selon laquelle les besoins et la satisfaction sociale sont plus importants pour la conduite du travail (et la récompense financière relativement moins importante) n'a pas été confirmée par des études expérimentales ultérieures. Elle a été largement critiquée, par exemple par H. A. Landsberger de l'Université Cornell (Landsberger, 1958) ou Alex Carey. « L'approche et l'hypothèse de Mayo ont fait l'objet de larges critiques, dont beaucoup sont convaincantes. Elles comprennent des accusations de partialité pro-management, de partialité clinique et de naïveté scientifique » (Carey, 1967, p. 403-404).

Quoi qu'il en soit, dans une salle de classe, s'il suffit d'un peu d'attention ou d'observation supplémentaire pour améliorer les résultats scolaires des élèves, ce serait la solution idéale pour l'ensemble du système éducatif. Par exemple, une grande quantité d'attention supplémentaire est accordée aux mauvais élèves, par de nombreux enseignants et leurs parents. Ils sont souvent envoyés suivre des cours de coaching supplémentaires, que ce soit à l'école, à la maison ou avec des enseignants externes. Si les élèves s'améliorent, l'effet de ce progrès se traduit généralement par une unité d'apprentissage additionnelle avec des portions de connaissances supplémentaires, des méthodes d'enseignement différentes et plus individualisées, etc... Si les leçons complémentaires restent infructueuses, cela est généralement attribué à la capacité de l'élève ou à la mauvaise qualité des leçons supplémentaires. Parfois, ces leçons complémentaires sont fructueuses, parfois non. Dans tous les cas, les élèves reçoivent une attention et une observation additionnelles de la part de leurs parents qui les ont envoyés à l'école et de l'enseignant supplémentaire. La principale différence avec l'expérience réside dans le fait que l'attention supplémentaire et l'intervention se concentrent sur un déficit particulier d'un élève spécifique et qu'il sera corrigé par des connaissances plus approfondies, alors que dans le cas de la méditation par le yoga, il n'y a pas de concentration directe sur le déficit particulier d'un élève. Tous les élèves bénéficient de la même intervention, mais les résultats peuvent être observés dans différents domaines (et non limités aux performances scolaires) liés aux différents élèves.

Néanmoins, si nous supposons toujours que l'attention spéciale (et non l'intervention) dans notre cas aurait conduit à une meilleure performance scolaire, cela n'explique pas nécessairement la baisse de l'anxiété académique, car une observation et une attention accrues peuvent également être perçues comme une pression supplémentaire, ce qui entraînerait des taux d'anxiété plus élevés. Et pourquoi une heure d'école supplémentaire chaque jour ne serait-elle pas perçue comme une pression supplémentaire ou une punition par les élèves ? En fait, certains élèves ont écrit dans leur journal qu'ils avaient ces sentiments au début, mais qu'ils ont changé d'avis après avoir apprécié la pratique de la méditation par le yoga.

À la suite de ce travail, nous sommes arrivés à la conclusion que l'effet Pygmalion (les élèves obtiennent de meilleurs résultats lorsque les enseignants ont des attentes plus élevées à leur égard) et l'effet Hawthorne (être un sujet d'observation conduit à de meilleures performances) n'étaient pas suffisamment appropriés pour expliquer les effets montrés dans la recherche. Les hypothèses de ces effets ont été testées et se sont avérées ne pas être présentes dans cette expérience, de sorte qu'elles sont considérées comme n'ayant pas de pouvoir explicatif dominant pour les résultats de cette expérience de recherche.

En mettant la recherche quasi-expérimentale en pratique, la représentation sociale positive de la méditation en Inde est devenue tout à fait évidente, puisque le responsable de l'éducation du district a exprimé son accord avec la recherche et que les enseignants des écoles participantes l'ont soutenue

en grande partie. La vision du monde non séculière de la connexion de l'homme et des éléments de la nature, qui fait partie de la technique de méditation Sahaja Yoga, est également répandue dans le sud de l'Inde. Mais, malgré ces conditions de mise en place, une structure de raisonnement éémique n'a pas permis d'expliquer complètement les résultats.

D'autres recherches ont montré des résultats plus élevés pour les méditations suivant l'approche traditionnelle sans pensée par rapport aux autres concernant l'augmentation de la matière grise (Hernandez *et al.*, 2016, 2020 vs. Hölzel *et al.*, 2011). Dans l'étude récente sur les performances scolaires, un changement positif d'environ 4 % a été constaté, tandis qu'une étude de Hall (1999) avec l'intervention d'une méditation simple (techniques de respiration naturelle, relaxation et techniques de focalisation de l'attention) n'a abouti qu'à une amélioration de 0,7 % des performances scolaires. La recherche de Hernandez était basée en Espagne. Cela indique que les effets démontrés dans la recherche récente n'ont pas nécessairement besoin du contexte social de l'Inde, avec une représentation sociale positive de la méditation intégrée dans un système de croyances non séculières, comme condition préalable aux effets démontrés en général et à la surperformance des autres techniques en particulier. En outre, d'autres recherches sur la méditation Sahaja Yoga, avec plusieurs effets significatifs donnés ci-dessus comme exemples, ont eu lieu, en grande partie, en dehors de l'Inde et donc l'effet montré dans ces dernières études, ne peut pas être expliqué avec un contexte socioculturel indien : par exemple, en Autriche (Hackl, 1995), en Australie (Harrison *et al.*, 2003 ; Manocha *et al.*, 2009, 2011), en Italie (Schneider *et al.*, 2010), en Russie (Aftanas *et al.*, 2005), en Espagne (Barros-Loscertales *et al.*, 2021), en Turquie (Yalta *et al.*, 2011), au Royaume-Uni (Rubia, 2009), à un niveau international ([USA, Canada, Mexique, Brésil, Suriname, Italie, France, Allemagne, Espagne, Chine] Hendriks *et al.*, 2021).

Par conséquent, l'influence du contexte socioculturel indien n'est finalement pas considérée comme une condition préalable à l'apparition des effets démontrés, pas plus qu'un système de croyances (indien) particulier ou un contexte non sécularisé ne semblent nécessaires pour produire des effets similaires. Mais le contexte socioculturel indien est considéré comme favorable à l'acceptation de l'implication initiale dans la méditation en général et dans un contexte éducatif avec les autorités scolaires en particulier.

Un autre phénomène a été observé dans l'analyse des données des trois variables dépendantes, qui sera analysée dans ce qui suit. Le groupe contrôle a montré une augmentation significative des moyennes du post-test pour les trois variables dépendantes. Les explications générales possibles pour de telles occurrences pourraient être des effets de biais résultant du choix de l'échantillon étudié ou des effets d'interférence extérieure, qui n'ont pas été contrôlés par l'expérimentateur. Les méthodes statistiques ont montré que la normalité de l'échantillon était confirmée et que, de plus, les moyennes des pré-tests étaient presque absolument égales dans le cas des trois variables dépendantes étudiées. Donc, on ne peut pas conclure à un biais dû au cadre quasi-expérimental. Les

changements dans un groupe contrôle peuvent se produire en raison de divers facteurs extérieurs qui ne sont pas sous contrôle dans une telle quasi-expérience. Dans les expériences techniques ou médicales, on s'attend à ce que l'intervention n'ait aucun effet sur le groupe contrôle. En revanche, dans les expériences s'inscrivant dans un contexte social et institutionnel, il peut y avoir des effets indirects de l'intervention sur le groupe contrôle, en raison de l'interaction sociale de tous les acteurs d'une institution avec les individus du groupe expérimental.

Avec les méthodes statistiques de l'ANCOVA et, en particulier, avec le résultat de la valeur PESQ (Partial ÉTA Squared), on peut calculer la partie du changement qui ne peut être expliquée que par l'intervention et qui exclut d'autres effets aléatoires ou non contrôlés. Dans cette recherche, cela signifie que les changements du groupe contrôle (CG) sont certainement dus, à un certain degré (statistique), à l'intervention par la méditation yoga sur le groupe expérimental (EG). Cela signifie que les changements dans le groupe expérimental et le groupe témoin sont corrélés à un degré statistiquement si significatif que la corrélation ne peut être expliquée que par le facteur donné de l'intervention (et non par d'autres facteurs aléatoires inconnus). L'ampleur du changement induit sur le groupe contrôle par l'intervention agissant sur le groupe expérimental a été démontrée par l'amélioration statistiquement significative des valeurs moyennes du groupe contrôle (DV1-EA 0,98%, DV2-AA 3,76%, DV3-AP 0,39%).

Ce phénomène signifie que le développement positif général des individus du groupe expérimental a exercé une influence positive sur les autres élèves de l'école (mesurée par les effets dans le groupe contrôle).

Une explication possible d'une telle influence ou d'un changement correspondant dans la présente recherche pourrait être que certains individus du groupe contrôle ont également commencé à méditer, mais seulement quelques élèves, et ceux-ci ont médité dans une moindre mesure, et ont donc montré des effets similaires mais avec une amplitude plus faible. Le modèle fonctionnaliste de la conformité, tel que proposé par exemple par Jenness (1932), Sherif (1935) et Asch (1951), considère les individus comme dépendants du groupe (alors que la société, les systèmes sociaux et l'environnement sont considérés comme des facteurs donnés). Par conséquent, l'individu montre une réaction sociale envers le groupe, avec la tendance à s'adapter aux valeurs et aux croyances du groupe (Moscovici, 1976, p. 1). Ces membres du groupe témoin, qui avaient peut-être un fort sentiment d'appartenance aux membres du groupe expérimental et qui avaient donc le sentiment d'appartenir au même groupe d'élèves de 9^e année, auraient pu se sentir en quelque sorte poussés par les membres du groupe expérimental à adopter leur « norme » de pratique de la méditation. Moscovici observe également des minorités actives qui « cherchent à convertir d'autres personnes » (Moscovici, 1983), dans certains cas. Mais cela n'a pas été observé dans cette recherche. Les témoignages des enseignants et les journaux intimes des élèves n'ont donné aucune indication à propos de faits selon lesquels les

membres du EG ont directement influencé les membres du CG pour qu'ils commencent à méditer eux aussi ou que les membres du CG ont commencé à méditer à une échelle notable.

L'exemple de pensée suivant illustre la manière dont une norme sociale peut influencer les individus dans le domaine universitaire. Considérons d'abord un élève qui a la capacité d'atteindre un certain niveau de performance. L'élève est nouveau dans la ville et devrait être affecté à une nouvelle école et à une nouvelle classe. En général, les enseignants et les parents supposent l'effet d'influence suivant : l'élève développera de plus grandes capacités dans une école et une classe avec un niveau de performance plus élevé. Soit il se motivera lui-même pour s'adapter à ce niveau de performance plus élevé, soit le niveau d'instruction est plus élevé et ses normes seront donc revues à la hausse. C'est l'effet positif d'une bonne influence. Le même élève placé dans une classe (ou une école) avec un niveau de compétence inférieur risque de ne pas être à la hauteur de ses propres possibilités, parce que le niveau d'enseignement sera plus faible ou parce qu'il ne se sent pas mis au défi et qu'il s'adaptera partiellement au niveau de compétence inférieur de ses camarades. À partir de cet exemple (dont on ne peut discuter ici tous les aspects de la situation décrite), on peut anticiper la façon dont un individu unique est affecté par différentes normes, ainsi que l'influence de groupes (plus petits) sur le niveau de la norme, ce qui sera discuté dans le paragraphe suivant.

Le point de vue des individus, qui s'écartent d'une norme, n'est pas le seul à être perçu dans la recherche actuelle. Moscovici pense que les groupes minoritaires sont la force derrière la plupart des changements. Il a examiné que la plupart des processus de changement « les plus importants » ne sont pas à inscrire dans le domaine de la déviation de la norme, mais dans celui de la *proposition d'une autre norme* (Moscovici, 1983, p.43). Dans le cadre de notre recherche, des changements connotés positifs se sont produits chez tous les individus du groupe expérimental, ce qui en a fait un groupe aux caractéristiques différentes par rapport à l'ensemble de la population (mesurée sur le CG par pré et post-test). Par conséquent, le groupe expérimental post-test peut être considéré comme l'occurrence d'un groupe minoritaire qui a influencé le groupe plus large ou la population, dans notre cas l'école. La mesure de la situation de la population a été effectuée par le biais des pré et post-tests du groupe témoin. L'influence du groupe minoritaire (EG) sur la population a entraîné un changement d'adaptation de la population (mesuré dans le CG) - plus petit, mais dans la même direction. La puissance de l'influence sociale des groupes minoritaires, Moscovici l'explique par leur « style comportemental ». Il s'agit par exemple de « leur manière d'exprimer leur point de vue ou d'organiser leurs réponses » (Moscovici, 1983, p. 44).

L'explication sociologique du changement observé dans les moyennes post-test du groupe contrôle est basée sur la théorie de l'influence des minorités de Moscovici. Les individus interagissent avec le groupe dans le but d'une croissance personnelle et il existe une interdépendance entre le groupe et l'individu, ou entre la société et les petits groupes de la société (Moscovici, 1976, p. 1). Un changement significatif des petits groupes peut avoir des effets sociaux sur le grand groupe ou la

population. Le changement positif observé pour le groupe expérimental de méditants actifs entraîne une augmentation du niveau général (norme).

Dans notre expérience, le niveau de performance global d'une classe a augmenté grâce à l'intervention. Ainsi, le niveau de performance global (ou la norme moyenne) de l'école a augmenté, ce qui a été mesuré dans l'expérience par les effets dans le groupe contrôle. Le niveau de performance plus élevé du groupe minoritaire a montré son effet social d'influence, selon la théorie de l'influence des minorités de Moscovici, et a rassemblé les autres élèves dans leur performance également.

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