

Cognitive balance: the States-Of-Mind model and mental health among French students

Muaweah Alsaleh, Romain Lebreuilly, Joëlle Lebreuilly, Manuel Tostain

► **To cite this version:**

Muaweah Alsaleh, Romain Lebreuilly, Joëlle Lebreuilly, Manuel Tostain. Cognitive balance: the States-Of-Mind model and mental health among French students. *Best Practices in Mental Health*, Lyceum Books, 2015, 11 (1), pp.42-53. hal-02313643

HAL Id: hal-02313643

<https://hal.univ-lorraine.fr/hal-02313643>

Submitted on 11 Oct 2019

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Cognitive balance: the States-Of-Mind model and mental health
among French students

ALSALEH, M.

Chercheur en psychologie

LEBREUILLY, R.

Maitre de conférences en Psychologie, Laboratoire InterPsy (EA 4432), groupe GRC, Nancy

LEBREUILLY, J.

Maître de Conférences HDR en psychologie.

TOSTAIN, M.

Professeur en psychologie

Centre d'Etude et de Recherche sur les Risques et les Vulnérabilités (CERReV), EA 3919,
Université de Caen Basse-Normandie, France.

Center for Research on Risks and Vulnerabilities (CERReV) EA 3919 University of Caen Lower
Normandy, France.

UFR de Psychologie – Department of Psychology

Université de Caen Basse-Normandie (University of Caen Lower Normandy), Esplanade de la
Paix, 14032 Caen Cedex, France.

Abstract

In the current study we examined the role of negative and positive thinking in the depression and anxiety level in 114 students aged between 17 and 26 years. We used the ATQ-N, ATQ-P, BDI and BAI questionnaires. Positive thinking and States Of Mind (SOM) were negatively correlated with both depression and anxiety indicators. *On the contrary*, negative thinking were positively correlated with depression and anxiety. Multiple linear regression results showed that negative thinking ($p < .01$) had a significant effect on incremental unique variance in anxiety. It was also found that SOM ($p < .01$) and positive thinking ($p \leq .05$) did effect for a sizable significant incremental unique variance in depression, while SOM and positive thinking ($p > .05$) *did not* effect significant incremental unique variance for anxiety. *In conclusion*, negative thinking and SOM ratios were the strongest predictors of mental health *among* students; whereas positive thinking were not the strongest predictor of mental health *among* students.

Keywords: Cognitive balance, Negative and Positive thinking, States Of Mind (SOM), Mental health, Anxiety, Depression.

1. Introduction

The changes in cognitive balance and specific deviations from this balance are associated with psychopathology and mental disorder but an optimal balance of positive and negative cognitions characterizes normal psychological functioning, mental health (Schwartz, 1986; Schwartz & Garamoni, 1986, 1989). The State of Mind ratio (positive thoughts / negative thoughts + positive thoughts) is perhaps the best predictor of psychological well-being and mental health. The mental health of a person is also perceived as being largely determined by the kind of thoughts that inhabit his *or her* mind for a day. Automatic thoughts are central built in several theories dealing with psychopathology (Ingram, Kendall, Siegle, Guarino, & McLaughlin, 1995).

Theoretical and empirical literature on cognitive-behavior therapy (CBT) have focused attention on the dysfunctional consequences of excessive negativity in negative automatic thoughts such as internal dialogue and the therapeutic benefits of altering negative automatic thoughts (Beck et al., 1979). The assessment of positive and negative cognitions may contribute to a better understanding of psychopathology and to the development of more effective treatments (Kendall and Hollon, 1981; Kendall, 1983).

Schwartz and Garamoni (1989) observed that cognitive balance may represent a crucial aspect of psychological self-regulation, or cognitive homeostasis, that can be measured as a form of “mental temperature.” *Current research has* studied the States Of Mind and ratio to understand the role significance of cognitive balance in mental health. Schwartz and Garamoni (1986) developed the "state of mind model" (SOM) which suggests that adaptive psychological functioning is characterized by an optimal balance of positive and negative cognitions. The States Of Mind (SOM) model (Garamoni, 1990; Schwartz and Garamoni, 1986, 1989) provides a structure for evaluating the relationship between psychopathology and the balance of positivity and negativity dimensions when processing information. This model allows us to simultaneously study these two dimensions. It may be well that not the absolute number of negative and positive thoughts is predictive of mental health, but rather the relative balance of positive and negative thoughts, as Schwartz and Garamoni suggest in their States Of Mind (SOM) model (Schwartz, 1986; Schwartz & Garamoni, 1989). In the original SOM model, the optimal balance between positive and negative thoughts (amount of positive thoughts divided by the sum of positive and negative thoughts [$P / (P + N)$]) was 0.62, in a theoretical range of 0–1.

The central hypothesis of the model is that healthy functioning will be characterized by an optimal balance of positivity and negativity, and that psychopathology will be marked by deviations from the optimal balance. The model defines five States Of Mind by different ratios [$P / (P + N)$] of positive to total positive (P) and negative (N) cognitions and/or affects. Those five States Of Mind included five different values to define the parameters of the five SOMs (0, 0.37, 0.50, 0.63, and 1). The distinct five SOM categories model (Schwartz & Garamoni, 1986, 1989) showed differences between optimal, healthy, subnormal and pathological balances of positive and negative thoughts (see **Table 1** for an overview). These five States Of Mind which vary between interpersonal (“talking to another”) and intrapersonal (“talking to oneself”) communications is used to describe the five SOMs as a continuum of inner “dialogues” or “monologues” (cf. Ellis, 1962; Beck, 1972; Meichenbaum, 1977).

Three SOM (positive dialogue, internal dialogue of conflict and negative dialogue) are dialogical form. Two SOM (positive monologue and negative monologue) are monological form. Negative monologues and positive monologues are based on assumptions associated

with different forms of psychopathology. Also, according to Schwartz and Garamoni (1989), this model is supported by some studies dealing with anxiety, depression and stress using instruments to measure positive and negative cognitions. This model will be used in this study and it will be related to mental health.

Studies have supported the SOM model in a range of adult samples including healthy students or adults (Calvete & Connor-Smith, 2005; Garamoni et al., 1991), people with test-anxiety (Diaz et al., 2001) or subclinical social fear (Sturmer et al., 2002), but also in adult clinical samples with social phobia (Beazley et al., 2001), agoraphobia (Michelson, Schwartz, & Marchione, 1991) or depression (Garamoni et al., 1991). Finally, Amsel and Fichten (1998) proved that answering scales with end points of 1–5 restrict the range of the SOM ratio. They therefore recommended calculating the SOM ratio based on an answering scale with an end point of 0–4.

Table 1

States Of Mind (SOM) categories with ranges of SOM ratios, set points and their meaning*.

SOM category	Range	Set-point ratio	Meaning	Description
Positive monologue	.69 to 1	.69	Unhealthy balance: excessive positivity, mania, unrealistic optimism.	Associated with maladaptive states of mania and hypomania if continually sustained at high levels.
Positive dialogue**	.56 - .68	.61	Balance between cognitive and affective structure. Most optimal balance: adaptive and flexible balance in healthy persons in neutral situations.	This theoretically optimal SOM is positively balanced, but at the same time includes sufficient negative cognition to remain realistically cautious.
Internal dialogue of conflict	.45 - .55	.50	Associated with doubt, ambivalence and mild anxiety/depression.	Associated with mild levels of psychopathology.
Negative dialogue	.32 - .44	.32	Moderate pathology (Anxiety - Depression).	Associated with moderate psychopathology.
Negative monologue	.00 to .31	.31	Unstable ratio, associated with pure and immediate panic and profound anxiety/depression.	Characterizes severe psychopathology, such as acute periods of panic or profound depression.

*(See Schwartz & Garamoni, 1986, for details of the model)¹.

**Optimal Ratio.

1.1. The present study

The purpose of the current study is to examine the role of both negative and positive thoughts and the SOM ratio in non-clinical sample and several important psychological variables that indicate the mental health (depression, anxiety) *among* students aged between 17 and 26 years *old* in a Caen student sample. *In conclusion*, in the present study we

¹ Recall that this ratio represents the proportion occupied by the positive thoughts of an individual (p) among all of his thoughts (positive and negative).

investigated the role of positive and negative thoughts and SOM ratio in student sample. We used a questionnaire with an answering scale between 0 and 4 that measures different negative and positive thoughts. A number of hypotheses were examined in the current study.

First, Hypothesis 1 states that Negative Thinking (NT) would be positively correlated with depression and anxiety whereas Hypothesis 2 and 3 state that Positive Thinking (PT) and SOM would be negatively correlated with depression and anxiety:

H1: NT + depression and anxiety.

H2: PT - depression and anxiety.

H3: SOM - depression and anxiety.

Second, following the cognitive model and the power of non-negative thinking hypothesis we expected *the* student sample aged between 17 to 26 years *old* to have more positive thoughts than negative thoughts.

Third, we expected that students whose SOM ratio was optimal (positive dialogue) had a better mental health compared to students who had other values of SOM ratio.

Finally, *among* students aged between 17 to 26 years *old*, we expected that negative thoughts and SOM ratios would be better predictors of anxiety and depression levels than positive thoughts.

2. Method

2.1. Participants

One hundred and fourteen students from University of Caen participated in this study. The average age was 18.98 years (SD = 1.41). There were ninety-seven (85%) females and seventeen (15%) males. *The* ethnic composition consisted of one hundred and fourteen (100%) French students. Participation was voluntary and responses were anonymous.

2.2. Inclusion and exclusion criteria

2.2. Inclusion criteria

Male and female students aged between 17 to 26 years *old*. Students are French.

2.3. Measures

2.3.1. Automatic Thoughts Questionnaire-Negative (ATQ-N)

The Automatic Thoughts Questionnaire-Negative (ATQ-N; Hollon & Kendall, 1980) was designed to measure the frequency of negative thoughts. These negative thoughts are hypothesized to play an important role in the development, maintenance and treatment of various psychological maladjustment, including depression (Beck et al., 1979) and anxiety (Beck et al., 1985). The thirty items on the ATQ-N are scored on a five-point Likert scale format (One = Not at all, Two = Sometimes, Three = Moderately often, Four = Often, Five = All the time). The total score is a sum of all thirty items. The ATQ has excellent internal consistency and has good concurrent validity for depression (Hollon & Kendall, 1980).

2.3.2. Automatic Thoughts Questionnaire-Positive (ATQ-P)

The ATQ-P (Ingram & Wisnicki, 1988) was developed as the theoretical complement to the ATQ-N. The ATQ-P is a thirty-item self-report instrument that measures the frequency of positive thoughts. The thirty items on the ATQ-N are scored on a five-point Likert scale format (One = Not at all, Two = Sometimes, Three = Moderately often, Four = Often, Five = All the time). The total score is a sum of all thirty items. The ATQ-P is reported to be reliable, able to discriminate between psychopathological and non-psychopathological states, unaffected by social desirability influences, has good convergent and discriminant validity, and is sensitive to change in affective states (Ingram et al., 1995).

2.3.3. Mental health

We used the Beck Depression and Anxiety Inventory, including cognitive, affective, and physiological aspects of depression and anxiety.

2.3.3.1. Beck Depression Inventory, abbreviated form, BDI-13

The Beck Depression Inventory-13 items is a thirteen-item self-report measure that assesses depressive symptoms. Each item contains four statements reflecting varying degrees of symptom severity. Respondents are instructed to circle the number (ranging from zero (0) to three (3), indicating severity) that corresponds with the statement that best describes them. Total BDI-13 score can range from zero (0) to thirty-nine (39). The BDI-13 has demonstrated high internal consistency, good test-retest reliability, and good construct and concurrent validity with other common measures of depression in clinical and nonclinical samples (Beck et al., 1996; Whisman, Perez, & Ramel, 2000). As the original version, the short version differentiates depressive subjects of non-depressed subjects and non-depressed anxious subjects, but it does not allow *differentiating* anxious depressed subjects *from* non-anxious depressed subjects (Collet, Cottraux, 1986; Bruch, Mattia, Heimberg, 1993).

2.3.3.1. Beck Anxiety Inventory (BAI)

The BAI (Beck, Epstein, Brown, & Steer, 1988) is a twenty-one-item and self-report inventory for measuring *the* severity of anxiety. Respondents are instructed to circle the number representing one of the four alternatives, which range from no anxiety (One = Not at all) to severe anxiety (Four = Severely or “I could barely stand it”). Total BAI score can range from twenty-one (21) to eighty-four (84). The BAI has demonstrated high internal consistency and test-retest reliability and good concurrent and discriminant validity (Beck & Steer, 1991; Beck et al., 1988; Fydrich, Dowdall, & Chambless, 1992; Riskind, Beck, Brown, & Steer, 1987). Moreover, the BAI was carefully constructed to avoid *confusion* with depression.

2.3.4. Procedure and data analysis

Participants were first-year undergraduate psychology and sociology students at The University of Caen, Lower Normandy. The ATQ-N, ATQ-P, BDI and BAI questionnaires were used in this study. Before completing the questionnaires, participants were asked to read an order *before filling in* the questionnaires. This study received approval from the University of Psychology’s Human Research (CERReV, MRSH) at the University of Caen, Lower Normandy.

Besides descriptive statistics and correlational analyses, there were two sets of two multiple linear regression analyses for each of the two dependent variables of mental health - depression and anxiety - using three models (Forward, Backward, Stepwise) of Multiple Linear Regression using the same five predictors of *gender*, age, positive thinking, (positive automatic thoughts), negative thinking (positive automatic thoughts) and States Of Mind (SOM) in each analysis. SAS computer software was used to perform multiple linear regression. For age, we selected *a* narrow age range to control its impact on the variables and the results of study.

3. Results

3.1. Sample descriptives

The means and standard deviations of the measure variables used in this study are shown in Table 2. The various correlation coefficients between the variables used in the study are reported in Table 3. Age was significantly correlated with *gender* and positive thoughts. *Gender* was significantly correlated with depression. Negative thoughts were inversely correlated with positive thoughts. Depression was significantly correlated with anxiety.

Table 2

Means (M) and standard deviations (SD) of the six variables measured in this study.

Variable	n	M	SD
Age	114	18.98	1.41
Negative Thinking	114	18.47	15.76
Positive Thinking	114	56.10	20.61
Depression	114	4.83	4.34
Anxiety	114	29.27	7.09
SOM	114	0.75	0.16

3.2. Thinking and mental health

We studied the relationship between both types of thinking, SOM ratios and mental health, including depression and anxiety aspects of mental health.

3.2.1. Thinking and depression

Depression was significantly correlated with SOM ratios, negative thinking, positive thinking and *gender* in descending order of magnitude (see Table 3). Multiple linear regression analyses showed that SOM ($p < .01$), positive thinking and negative thinking ($p \leq .05$) significantly *affect* depression. *Gender* and age do not significantly *affect* depression (see Table 4).

Table 3

Bivariate correlations among variables.

Measure	1	2	3	4	5	6	7
1. Age	-	.	-	-	-	-	.02
2. Gender		-	.	.0	-	.1	-.09
3. Negative			-	-	-	.7	.58**
4. Positive				-	.54	-	-.23**
5. SOM ratio					-	-	-.57**
6. Depression						-	.56**
7. Anxiety							-

Note. ** $p < .01$ (2-tailed); * $p < .05$ (2-tailed).

Table 4

Summary of multiple linear regression analyses for variables predicting depression.

Step	Variable	Labels	R ² partia l	R ² model	C(p)	F Value	Pr > F
1	SOM ratio	SOM ratio	0.61	0.61	8.4	172.80	.00**
2	Positive thinking	Positive thinking	0.01	0.63	4.4	4.27	0.04*
3	Negative thinking	Negative thinking	0.01	0.62	6.7	3.62	0.05*
4	Gender	Gender	0.00	0.64	5.2	1.16	0.28
5	Age	Age	0.00	0.64	6.0	1.27	0.26

Note. ** p<.01; *p≤.05

3.2.2. Thinking and anxiety

Anxiety was significant with negative thinking, SOM ratios, positive thinking and *gender* in descending order of magnitude (see Table 3). Multiple linear regression analyses showed that only negative thinking (p<.01) significantly *affected* anxiety. *Gender*, age, positive thinking and SOM (p>.05) did not significantly *affect* anxiety (see Table 5).

Table 5

Summary of multiple linear regression analyses for variables predicting anxiety.

Step	Variable	Labels	R ² partial	R ² model	C(p)	F Value	Pr > F
1	Negative thinking	Negative thinking	0.34	0.34	2.65	57.41	.00**
2	Gender	Gender	0.02	0.36	1.55	3.14	0.06
3	SOM ratio	SOM ratio	0.00	0.37	4.12	0.12	0.73
4	Age	Age	0.00	0.36	2.43	0.31	0.58
5	Positive thinking	Positive thinking	0.01	0.36	1.55	1.13	0.29

Note. ** p<.01; *p≤.05

3.3. SOM and aspects of mental health

Table 6 shows the results (means and standard deviations) of the two components of mental health (depression and anxiety) according to the five States Of Mind. This table also shows the number of participants associated with each of the States Of Mind. In fact, only one participant had a negative monologue, 5 students maintained a negative dialogue, 10 had an internal dialogue of conflict, 18 had a dialogue that we can characterize as optimal (positive dialogue according to the criteria proposed by Schwartz & Garamoni, 1986) while a high number of participants, 80 out of 114 (70.18%), had an *unadapted* State Of Mind ratio (too positive according to the authors because it is located within the limits of positive monologue, between 0.69 and 1). In other words, in this sample of students, we noted that 4 times more students had a State Of Mind ratio called positive monologue (N = 80, not adapted state of mind) compared to those found within the positive dialogue (N = 18, adapted state of mind).

We tested differences in average mental health variables (depression and anxiety) between participants who had a positive dialogue versus participants who had a positive monologue because they are the only groups where the number of subjects *was* sufficiently high. Table 6 presents the means and standard deviations of depression and anxiety among participants who showed a positive dialogue or positive monologue. The addition of a T-test in Table 6 helps demonstrate significant differences between the two groups regarding depression ($t(96) = 5.40, p < .001$) and anxiety ($t(96) = 3.80, p < .001$). This means that there are statistically significant differences between positive dialogues and positive monologues in depression and anxiety.

Table 6

Descriptive data to two dimensions of mental health (depression and anxiety) according to the five States Of Mind.

Limits of the five States Of Mind	Nature SOM	Depression		Anxiety		N
		Average	SD	Average	SD	
.00 - .31	Negative monologue	-	-	-	-	1
.32 - .44	Negative dialogue	13.60	3.05	35.60	4.10	5
.45 - .55	Internal dialogue of conflict	9.00	2.91	32.50	2.55	10
.56 - .68	Positive dialogue*	6.72	2.82	33.11	9.05	18
.69 - 1.00	Positive monologue	3.06	2.55	27.18	5.08	80

114

* Optimal ratio

In *conclusion*, participants having a positive monologue seem to report a depression and anxiety which is significantly lower than those who have a positive dialogue level. Our third hypothesis was refuted. Indeed, the students whose mindset is optimal (positive dialogue) have poorer mental health than students who have a positive monologue. The analysis of average values of variables showed that students who had a positive monologue declared with significantly better mental health (decreased levels of depression and anxiety) than those who had a positive dialogue. But we have to keep *in mind* that positive monologue is considered as a non-adapted state of mind as too positive according to Schwartz and Garamoni (1986). It is difficult to interpret the mixed evidence. One possible explanation is the age and/or number of the participants.

4. Discussion

The purpose of the current study was to examine the role of both negative and positive thoughts and the SOM ratio in a non-clinical sample and several important psychological variables that indicate the mental health (depression, anxiety) *among* students aged between 17 and 26 years *old* in a Caen student sample. The current study focuses on studying negative, positive thinking and SOM together across multiple negative and positive health outcomes

and their relationships with mental health, including depression and anxiety aspects of mental health.

Some limitations of the current study must be noted before discussing the findings. First, the findings may not be generalized to clinical samples. Further studies using non-clinical and/or clinical samples are needed to replicate the results. Future studies using experimental or prospective research designs may be helpful to *shed light on* this issue. Before discussing the study main findings, an examination of the demographic variables showed that they played a relatively minor explanatory role compared to SOM, negative thinking, and positive thinking. Age did not significantly predict any of the variables, because the age range was *very narrow* but age was significantly correlated with *gender* and positive thinking.

Gender was also found not to be correlated to either type of thinking or SOM. This means that males are as likely as females to think both negatively as well as positively, contrary to common gender stereotype. According to what was expected based on the Power of Non-negative Thinking (PNT) hypothesis, students reported both more positive and less negative thoughts. Furthermore, SOM ratio was the strongest predictor of depression level in mental disorder; but negative thoughts were the strongest predictors of anxiety level in mental disorder. The role of SOM and positive thoughts in the mental disorder model *among* students clearly needs further research attention.

Similar to previous research findings (Zahn-Waxler et al., 2006), *gender* was significantly correlated with depression. Multiple linear regression results showed that the *gender affect* sizes were weaker when compared to SOM and both types of thinking in depression, but the *gender*, positive thinking, and SOM effect sizes were not significant when compared to negative thinking in anxiety. These results underlined the importance of examining factors beyond *gender* when explaining individual differences in mental health.

With regard to the hypotheses being tested, correlational results supported Hypothesis 1, 2 and 3. Negative thinking was positively correlated with depression and anxiety (Hypothesis 1). For positive thinking and SOM, the reverse pattern was obtained. The positive thinking and SOM were negatively correlated with anxiety and depression (Hypothesis 2 and 3). The correlational results obtained were congruent with the theoretical expectations as well as previous research findings. Similar to the studies (e.g., Beck et al., 1979 and Szentagotai & Freeman, 2007), negative thinking was found to be positively related to depression and anxiety. The multiple linear regression results supported Hypothesis 1, and Hypothesis 2 and 3 for depression, but not for anxiety.

The multiple linear regression results showed that *gender* and age ($p > .05$) have no size *affect with* depression and anxiety. SOM ($p < .01$), positive and negative thinking ($p \leq .05$) accounted for more of the incremental unique variance in depression, in order of affect size. Negative thinking ($p < .01$) accounted for more of the incremental unique variance in anxiety than positive thinking and SOM ($p > .05$). This result is consistent with the proposal by Kendall (1984) and Kendall and Hollon (1981) in that the presence of positive thinking may be less important in determining psychopathology than the absence of negative thinking.

The current study *uncovered* a number of implications. First, the results underlined that SOM ratios were relatively more important than negative thinking and positive thinking in explaining depression but the results underlined that negative thinking *was* relatively more important than positive thinking in explaining anxiety. However, the results implied that negative thinking *was* more important than SOM and positive thinking. Our results underlined the importance of examining negative cognition when explaining psychological disorders and mental health. This means that evoking positive thinking and/or SOM alone may not be

sufficient to protect oneself from depression and anxiety. Therefore, it is also consistent with the “power of non-negative thinking” by a number of theorists such as Kendall & Chansky, 1991. This means that the reduction of depression and anxiety is associated with a reduction of negative thoughts rather than an increase of positive thought. Perhaps the severity of *one's* depression may play a part in determining the frequency of SOM, negative and/or positive thoughts present. In the current non-clinical sample, it was found that the presence of SOM explained more than negative and positive thinking about the variance in depression but it was found that the presence of negative thinking explained more than SOM and positive thinking about the variance in anxiety.

With regard to the hypothesis being tested, students whose SOM ratio was optimal (positive dialogue) had a good mental health compared to students who had other values of SOM ratio. Our hypothesis was refuted because participants having a positive monologue seem to report a depression and anxiety which is significantly lower than those who have a positive dialogue level. But we have to keep on mind that positive monologue is considered as a non-adapted state of mind as too positive according to Schwartz and Garamoni (1986).

Negative and positive thoughts and SOM ratios differentially predicted depression and anxiety level conditional upon group status. SOM ratios were the strongest predictors of depression level in mental health, with a large effect *on* positive thoughts and a medium effect *on* negative thoughts. However, negative thoughts were the strongest predictors of anxiety level in mental health. In this study, SOM and positive thoughts (large effect) predicted depression level but negative thoughts (small effect) predicted depression level. This suggests that next to more negative thoughts, less positive thoughts are a first indicator of elevated mental disorder in normal students. As anxiety levels and depression levels increase and reach the level of a mental disorder, negative thoughts might become more important and more interfering.

Finally, negative and positive thinking have directly opposite natures since they are negatively correlated. It is possible for one individual to have both types of thinking within a specific period of time. However, individuals with high negative thinking do have low positive thinking, and vice versa.

Non-clinical implications

Our study suggests that a lack of SOM and positive thoughts might not only be an epiphenomenon of anxiety. Although more research is needed, it cannot be ruled out that a lack of positive thoughts is equally important in the development or manifestation of mental health as an excessive amount of negative thoughts. It should be noted however that our study was correlational and that we did not assess the temporal precedence of positive and negative thinking, depression and anxiety.

The Power of Non-negative Thinking hypothesis supposes that psychopathology is associated with more negative but not less positive thoughts, and the hypothesis also predicts that good mental health is associated with a reduction of negative thoughts rather than an increase in positive thoughts (Kendall, 1984). Based on our results, restructuring negative thoughts and enhancing positive thoughts may both be important *in* improving mental health. On the other hand, enhancing positive thoughts might only be more effective in the prevention of depressive disorders as the amount of positive thoughts were only predictive of depression level in our sample. It remains unclear whether both negative and positive thoughts are important mechanisms *in* improving mental health. Research in this area has not been exhaustive, especially in adults, but is needed to clarify this issue.

To conclude, in this study a cognition questionnaire was used to simultaneously measure the amount of negative and positive thoughts in a sample of students. Negative and positive thoughts and their ratio all seem to be related to the level of mental health. However, negative thoughts and the SOM ratio are the strongest predictors of mental health levels in non-clinical students, while positive thoughts are related to lower levels of anxiety and depression. Future research should clarify which is most effective in *improving* mental health: restructuring negative thoughts and/or enhancing positive thoughts. *Furthermore*, more research is necessary concerning the validity of the SOM model *among* students and adults.

References

1. Beck, A. T. (2005). *The current state of cognitive therapy: a 40-year retrospective*. *Archives of General Psychiatry*, 62, 953–959.
2. Beck, A. T., & Steer, R. A. (1991). *Relationship between the Beck Anxiety Inventory and the Hamilton Anxiety Rating Scale with anxious outpatients*. *Journal of Anxiety Disorders*, 5, 213–223.
3. Beck, A. T., Emery, G., & Greenberg, R. L. (1985). *Anxiety disorders and phobias: A cognitive perspective*. New York: Basic Books.
4. Beck, A. T., Emery, G., & Greenberg, R. L. (1985). *Anxiety disorders and phobias: A cognitive perspective*. New York: Basic Books.
5. Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). *An inventory for measuring clinical anxiety: psychometric properties*. *Journal of Consulting and Clinical Psychology*, 56, 893–897.
6. Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). *An inventory for measuring clinical anxiety: psychometric properties*. *Journal of Consulting and Clinical Psychology*, 56, 893–897.
7. Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *BDI-II, Beck Depression Inventory: Manual* (2nd ed.). Boston: Harcourt Brace.
8. Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *BDI-II, Beck Depression Inventory: Manual* (2nd ed.). Boston: Harcourt Brace.
9. Beck, A.T., Rush, A.J., Shaw, B.F., & Emery, G. (1979). *Cognitive Therapy of Depression*. New York: Guilford Press.
10. Bruch, M A., Mattia, J.L., Heimberg, R.G., et al. (1993). *Cognitive specificity in social anxiety and depression: supporting evidence and qualifications due to affective confounding*. *Cogn Therapy Res*; 17: 1-21.
11. Collet, L., Cottraux, J. (1986). *Inventaire de la dépression de Beck (13 items). Étude de la validité convergente avec les échelles de Hamilton et de ralentissement de Widlöcher*. *Encephale*; 12 : 77-9.
12. Diener, E., Emmons, A., Larsen, R. J., & Griffin, S. (1985). *The satisfaction with life scale: A measurement of life satisfaction*. *Journal of Personality Assessment*, 49, 71–75.
13. Fydrich, T., Dowdall, D., & Chambless, D. L. (1992). *Reliability and validity of the BAI*. *Journal of Anxiety Disorder*, 6, 55–61.
14. Hollon, S. D., & Kendall, P. C. (1980). *Cognitive self-statements in depression: Development of an automatic thoughts questionnaire*. *Cognitive Therapy and Research*, 4, 383-395.
15. Ingram, R. E., & Wisnicki, K. S. (1988). *Assessment of positive automatic cognition*. *Journal of Consulting and Clinical Psychology*, 56, 898–902.
16. Ingram, R. E., Kendall, P. C., Siegle, G., & Guarino, J. (1995). *Psychometric properties of the positive automatic thoughts questionnaire*. *Psychological Assessment*, 7, 495–507.
17. Ingram, R. E., Kendall, P. C., Siegle, G., Guarino, J., & McLaughlin, S. C. (1995). *Psychometric properties of the positive automatic thoughts questionnaire*. *Psychological Assessment*, 7, 495-507.
18. Kendall, P. C., & Hollon, S. D. (1981). *Assessing self-referent speech: Methods in the measurement of self-statements*. In P. C. Kendall, & S. D. Hollon (Eds.), *Assessment strategies for cognitive-behavioral interventions* (pp. 85–118). New York: Academic Press.

19. Kendall, P. C., & Hollon, S. D. (Eds.). (1981). *Assessment strategies for cognitive-behavioral interventions*. New York: Guilford Press.
20. Neto, F. (1993). *The satisfaction with life scale: Psychometrics properties in an adolescent sample*. *Journal of Youth and Adolescence*, 22, 125–134.
21. Pavot, W., Diener, E., Colvin, C. R., & Sandvik, E. (1991). *Further validation of the satisfaction with life scale: Evidence for the cross-method convergence of well-being measures*. *Journal of Personality Assessment*, 57, 149–161.
22. Riskind, J. H., Beck, A. T., Brown, G., & Steer, R. A. (1987). *Taking the measure of anxiety and depression: Validity of the reconstructed Hamilton Scales*. *The Journal of Nervous and Mental Disease*, 175, 474–479.
23. Schwartz, R.M. (1986). *The internal dialogue: On the asymmetry between positive and negative coping thoughts*. *Cognitive Therapy and Research*, 10, 591-605.
24. Schwartz, R.M., & Garamoni, G.L. (1986). *A structural model of positive and negative States Of Mind : Asymmetry in the internal dialogue*. In P.C. Kendall (Ed.), *Advances in cognitive-behavioral research and therapy* (Vol. 5, pp. 1-62). New York: Academic Press.
25. Schwartz, R.M., & Garamoni, G.L. (1986). *Cognitive assessment: A multibehavior-multi method-multiperspective approach*. *Journal of Psychopathology and Behavioral Assessment*, 8, 185-197.
26. Schwartz, R.M., & Garamoni, G.L. (1989). *Cognitive balance and psychopathology: Evaluation of an information processing model of positive and negative States Of Mind*. *Clinical Psychology Review*, 9, 271-294,.
27. Schwartz, R.M., & Michelson, L. (1987). *States Of Mind model: Cognitive balance in the treatment of agoraphobia*. *Journal of Consulting and Clinical Psychology*, 55, 557-565.
28. Schwartz, R.M., & Gottman, J.M. (1976). *Toward a task analysis of assertive behavior*. *Journal of Consulting and Clinical Psychology*, 44, 910-926.
29. Whisman, M.A., Perez, J. E., & Ramel, W. (2000). *Factor structure of the Beck Depression Inventory – Second Edition (BDI-II) in a student sample*. *Journal of Clinical Psychology*, 56, 545–551.
30. Zahn-Waxler, C., Crick, N. R., Shirtcliff, E. A., & Woods, K. E. (2006). The origins and development of psychopathology in females and males. In D. Cicchetti, & D. J. Cohen (Eds.), *Developmental psychopathology: Risk, disorder, and adaptation* (pp. 76–138). Hoboken, New Jersey: Wiley.