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Hope, perceived ability, and achievement in physical education classes and sports

YANN DELAS¹, MARC-ANDRÉ K. LAFRENIÇRE², FABIEN FENOUILLET³, YVAN PAQUET⁴,
CHARLES MARTIN-KRUMM⁵

^{1,5}CREAD - EA 3875 – UBO, Rennes 2, FRANCE

²McGill University, CANADA

³CHART EA 4004 - Université Paris Ouest Nanterre La Défense, FRANCE

⁴DIMPS - EA 4075, Université de la Réunion, FRANCE

⁵Institut de Recherche Biomédicale des Armées (IRBA), Brétigny, FRANCE, IFEPS Angers Les Ponts de Cé, FRANCE, APEMAC EA 4360 UDL, Metz, FRANCE

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Abstract

The present study examined the relationships among hope, in its trait and state forms, perceived ability in sport, and students' grades in physical education classes (GPEC). Participants were 216 French students from middle and high schools. Consistent with previous studies (Curry, Snyder, Cook, Ruby, & Rehm, 1997; Peterson, Gerhardt, & Rode, 2006), results from a 6-month prospective study revealed that perceived ability predicted final GPEC, through the mediating role of state hope. Moreover, dispositional hope predicted perceived ability in PE, and state hope that, in turn, positively predicted final GPEC. Implications and future research directions are discussed in light of the present research.

Keywords: Hope theory, perceived ability, physical education, achievement, performance

Introduction

Hope, perceived ability, and achievement in physical education and sports

Since the 1980s, research has been interested in the concept of hope as a strength of character that could have an impact on cognitions, emotions, and behaviors of individuals (Snyder, 2002). As such, many studies showed that hope is associated with better performance in areas such as school, sport, and work (see Lopez, Rose, Robinson, Marques, & Pais-Ribeiro, 2009, for a review). However, the processes by which hope influences performance remain unclear (Alarcon, Bowling, & Khazon, 2013). In addition, trait and state hope are often studied separately, so it's difficult to determine the differential effects of these variables on performance (Peterson et al., 2006). Thus, the aim of this paper was to investigate the distinct role of trait and state hope on performance in the context of physical education and to test the role of a potential mediator, namely perceived ability.

The Snyder's hope model

Hope can be defined as “the process of thinking about one's goals, along with the motivation to move toward those goals (agency), and the ways to achieve those goals (pathways)” (Snyder, 1995, p. 355). According to Snyder's model, hope includes two components *agency* and *pathways*. The *agency thinking* concerns the propensity to develop and support a sufficient motivation to achieve its own goals (Snyder, 2002). *Pathways thinking* refers to the ability of individuals to identify ways or strategies to achieve desired goals. Although *agency* and *pathways* components are reciprocal, positively related, and additive, they are not synonymous (Snyder et al., 1991). Furthermore, hope can be considered as both a stable personality trait and a temporary frame of mind. From this perspective, the Dispositional Hope Scale (DHS; Snyder et al., 1991) and State Hope Scale (SHS; Snyder et al., 1996) were developed and validated.

The role of hope in academic achievement

Hope is related to many outcomes, from physical and mental health to academic and sport achievement (Snyder, 2002). Previous studies showed that dispositional hope is positively related to academic success. More precisely, hope has been found to be positively related to overall Grade Point Average (GPA) in middle school (Gilman, Dooley, & Florell, 2006) as well as grades in high school students (Ciarrochi, Heaven, & Davies, 2007). Furthermore, Marques, Pais-Ribeiro, and Lopez (2011) demonstrated that hope is a predictor of academic achievement over a 2-year period in middle-school students. In a 6-year longitudinal study, hope remained a significant predictor of better overall grade point averages even after controlling for entrance examination scores (Snyder et al., 2002). Similar results were found when controlling for prior grades and self-esteem (Snyder et al.,

1991) and in other longitudinal studies in which dispositional hope predicted academic achievement above intelligence, personality, and previous academic achievement markers (Day, Hanson, Maltby, Proctor, & Wood, 2010; Rand, Martin, & Shea, 2011). However, the influence of hope on academic achievement has not been systematically investigated in specific subjects, with one exception. Ciarrochi and colleagues (2007) found that hope forecasts total school grades as well as individual subjects' performance (i.e., English, Religious Studies, Math, Science, and Design) after controlling for gender and verbal and numerical abilities (Ciarrochi et al., 2007). Consequently, most previous studies examined grades by averaging grades across class subjects. Therefore, despite having performance for several subjects, the association between hope and achievement was not systematically explored across different school subjects. This distinction is important. It gives the opportunity to explore the differential effects of hope on success in different types of subjects in comparison to general school achievement.

The role of hope and ability in sport achievement

Few studies have investigated the role of hope in the context of sport or physical activities. Curry et al. (1997, Study 1) found that trait hope and state hope were correlated with track and field performance in female cross-country runners. Moreover, results showed that both dispositional and state hope were significant predictors of performance. In addition, hope predicted performance above and beyond training mileage. In another study (Curry et al., 1997, Study 3), natural athletic ability (evaluated by coaches) was a significant predictor of performance. Nevertheless, trait hope scores explained variance in sport performance above and beyond athletic ability. It should be noted however that athletic ability was a better predictor of performance than trait hope. Likewise, Ciarrochi and colleagues (2007) revealed that numerical and verbal abilities explain greater variance in outcomes than hope, highlighting the importance of ability in academic achievement. These results stressed the importance of ability in achievement. Nonetheless, findings also revealed that hope has incremental predictive value in achievement.

Many questions remain concerning the role of aptitude and perceived ability in hope, especially in a specific context such as physical activities. Self-concept of one's ability, or perceived ability, can be defined as an individual perception of their actual competence in a particular subject (e.g., Eccles & Wigfield, 2002). Complementary to Curry et al. (1997) study, Snyder et al. (1997) showed that dispositional hope is positively correlated with the five subscales of the Self-Perception Profile for Children (SPP-C; Harter, 1985). One of the major sources of competency-related thoughts in children concerns their perceived physical capacities (Snyder et al., 1997). These results thus suggest that perceived ability has an important role in the prediction of hope.

Interplay between trait hope and state hope

Hope is a hierarchical construct (Lopez et al., 2009) and its level may vary depending on whether it refers to general goals (i.e., dispositional hope) or specific goals in a definite life area or at a exact moment (i.e., domain specific hope or state hope). People may have a stable level of dispositional hope across most situations, and a temporary mind frame that reflects situational hope in specific domains (e.g., physical activities) and situations (i.e., state). Moreover, individuals with higher levels of dispositional hope should theoretically demonstrate higher levels of state hope (Snyder et al., 1996). However, since trait individual differences are more distal from performance than are state individual differences (Peterson et al., 2006), state hope in specific context should be more predictive of performance and achievement than general level of dispositional hope. For instance, Peterson et al. (2006) demonstrated a greater predictive effect of state hope on performance than trait hope. Moreover, findings indicated that trait hope was positively related to performance through the mediating effect of state hope (Peterson et al., 2006).

In spite of the fact that it is considered as a distal variable in the prediction of achievement in a given context in most of studies, trait hope has been applied to predict performance in specific domains (e.g., Ciarrochi et al., 2007; Curry et al., 1997; Marques, Pais-Ribeiro, & Lopez, 2011; Snyder & Shorey, 2002). In contrast, a small amount of studies has focused on the predictive role of state hope in performance and achievement (e.g., Curry et al., 1997; Davidson, Feldman, & Margalit, 2012; Peterson et al., 2006). Moreover, few studies (Curry et al., 1997; Peterson et al., 2006) have investigated the relative importance of trait versus state hope, as well as how they relate to each other, and how their effects on dependents variables are related and differentiated to each other (Peterson et al., 2006). For instance, Curry et al. (1997) have shown the predictive effect of trait hope on performance and the mediating role of state hope in this relationship. Similarly, the results of Peterson et al. (2006) showed that trait hope was positively and indirectly related to performance on an anagram task through state hope. Despite these studies, the links by which trait and state hope are related to one another and to performance needs to be investigated further to understand the mediation processes involved.

The present Study

The present study improves on past research in two ways. First, no study has investigated the role of hope in physical performance, in another context than high performance sports. So, the first goal of the present study will examine the role of hope in performance in the context of school physical education. Secondly, we will explore

the separate effects of trait and state hope on performance and simultaneously the role of perceived ability in the context of physical education.

The general goal of the present study was thus to test a model that described how hope (trait and state) and perceived ability influences final grades in the context of physical education. The present research had two specific objectives. The first was to confirm past findings in sport context concerning the role of perceived ability and state hope in achievement. Previous studies demonstrated that perceived ability plays an important role in the prediction of hope and sport performance (Curry et al., 1997; Snyder et al., 1997). Furthermore, children with perceptions of physical competence manifested elevated level of trait hope (Snyder et al., 1997). State hope, compared with trait hope, referred specifically to the level of hope in the context of PE teaching and should be more strongly associated with perceived ability in sport achievement.

According to Curry et al. (1997), perceived ability is a better predictor of performance than trait hope. Thus, perceived ability may be a direct predictor of Grades during Physical Education Classes (GPEC). Consequently, if perceived ability is related to state hope, perceiving oneself as competent in physical education (PE) should positively predict both state hope concerning personal goal attainment and achievement in PE. Consequently, state hope should mediate parts of the relationship between perceived ability and performance. Furthermore, Curry et al. (1997) and Peterson et al. (2006) have demonstrated that state hope is a predictor of performance, but that it may also mediate the effects between the independent variables (e.g., perceived ability) and performance or accomplishment. Accordingly, both perceived ability and state hope are presumed to have a direct effect on performance in PE. However, state hope is presumed to simultaneously be a direct predictor of performance in PE and a mediator of the relationship between perceived ability and performance.

Currently, few studies have explored the separate effect of trait hope and state hope on performance, especially in the context of sport and PE (Curry et al., 1997; Rolo & Gould, 2007). In other domains, research has shown that hope in both its trait and state forms is an effective predictor of various performance-related behaviors (Snyder, 2002). More specifically, previous studies demonstrated that trait hope predicted performance and grade either directly (e.g., Marques et al., 2011; Snyder et al., 2002) or indirectly (Curry et al., 1997; Peterson et al., 2006), through state hope. Moreover, depending on how achievement is assessed, trait or state hope might be a better predictor of performance (Curry et al., 1997; Peterson et al., 2006). It is thus necessary to clarify relationships between trait hope, state hope, and performance to understand the differential impacts of these independent variables on performance-related outcomes. Trait variables are more distal from performance than are state individual differences, so the relationships of trait constructs with performance should be mediated by equivalent state constructs (Chen, Gully, Whiteman, & Kilcullen, 2000). Consequently, the second objective of the present research was to test the indirect effect of trait hope on sport achievement (i.e., final grade in PE), through the mediating role of state hope. To resume, trait hope is presumed to be linked with perceived ability and state hope, which predicted GPEC. Finally, perceived ability predicted state hope and should be related to performance in PE lessons.

Method

Participants

This study was conducted over a 1-year period. The total sample included 216 school students. Students' age ranged from 11-20 years ($M = 13.16$; $SD = 2.15$) and were predominantly female (57.9%). The sports in which the performances were achieved by students are basketball, volleyball, dance and athletics. These sports are common during physical education classes in France.

Procedure

Approval to collect data was secured through school administrators, teachers, students, and their parents. A letter describing the study and requesting permission for student participation was sent to parents. A total of 226 of the students returned signed parental permissions forms. Each student who obtained parental consent and gave assent to participate in the study was administered each of the measures described below. Because of too much missing data, 10 participants were dismissed from the study. The questionnaires were filled in PE classes and ensured data confidentiality. The instructions were given to the students by the experimenters before each assessment. In the teaching of French PE, the school year is divided into 3 different cycles of 8 to 10 weeks each. Students practice a single sport every cycle, which is equivalent to one trimester. At the start of the school year (Time 1), the Dispositional Hope Scale was administered. Afterward, at the beginning of the second PE cycle (i.e., 8 weeks later; Time 2), perceived ability in the sport which was taught during the PE cycle was assessed. In the middle of the second PE cycle (i.e., 4 weeks later; Time 3), SHS was administered. Finally, at the end of the second trimester (i.e., 4 weeks later; Time 4) final grades were collected. In line with past studies (e.g., Peterson & Barrett, 1987; Martin-Krumm, Sarrazin, & Peterson, 2005), the average of the grades in Physical Education class (GPEC) has been used as an indicator of achievement during PE classes.

Measures

Trait Hope Trait hope was assessed using the French version of the Dispositional Hope Scale (DHS; Snyder et al., 1991). This measure was validated by Gana, Daigre, and Ledrich (2012). The Trait Hope Scale contains four agency items, four pathways items, and four filler items. Respondents are asked to rate items on an 8-point Likert scale ranging from 1 (*definitely false*) to 8 (*definitely true*). Past research has shown this scale to demonstrate good psychometric properties (Babyak, Snyder, & Yoshinobu, 1993; Snyder et al., 1991). The internal reliability of pathways and agency subscales and for the overall scale was acceptable ($\alpha = .69, .74, \text{ and } .76$ respectively).

State Hope

The State Hope Scale (SHS; Snyder et al., 1996) is a six-item scale containing three agency and three pathway items. Given that we were interested in participants' hope for successful performance in a particular domain (i.e., domain specific state), the scale items were slightly modified to assess how participants felt "right now" in the PE teaching. For instance, a sample pathways item read as follows: "In the sport that I practice in this PE cycle, I can think of many ways to reach my current goals." instead of "I can think of many ways to reach my current goals." Respondents were asked to rate items on an 8-point Likert scale ranging from 1 (*definitely false*) to 8 (*definitely true*). In this study, we used the French version of the SHS (Martin-Krumm, Delas, Lafreničre, Fenouillet, & Lopez, 2014). Results revealed adequate internal consistencies for pathways and agency subscales and for the overall score ($\alpha = .72, .69, \text{ and } .80$ respectively).

Perceived Ability

The Specific Perceived Ability Questionnaire (SPAQ; Famose, Sarrazin, & Cury, 1994) was used to assess perceived ability in a particular sporting activity (e.g., basket-ball). The questionnaire was oriented toward the sport which started in PE classes at Time 2, and continued during the following cycles. The instrument comprises five-items which were based from the scale used by Nicholls and colleagues (Nicholls, Patashnick, & Nolen, 1985; e.g., "When you play basketball and you compare yourself to most friends of your age, you feel" (1) "very bad" to (11) "very good"). In previous research conducted with adolescents (e.g., Cury, Biddle, Sarrazin, & Famose, 1997; Martin-Krumm, Sarrazin, Peterson, & Famose, 2003), the questionnaire showed good construct validity, internal consistency, and predictive validity. In this study, the internal consistency was satisfactory ($\alpha = .86$).

Grades in Physical Education Class (GPEC)

In line with past studies (Martin-Krumm, Sarrazin, & Peterson, 2005; Peterson & Barrett, 1987), the grades in PE classes was used as an indicator of achievement. Grades were obtained from student's school records at the end of the cycle. Grades ranged between 0 and 20, with 0 reporting the lowest achievement and 20 reporting the highest achievement.

Data analysis

All structural equation modeling analyses in the present study were performed with AMOS 22.0 (Arbuckle, 2007). A covariance matrix was used as input and models were estimated using the maximum likelihood method. Because the χ^2 test is sensitive to sample size, we also evaluated model fit using the χ^2/df ratio and the following indices: the Comparative Fit Index (CFI), the Incremental Fit Index (IFI), and Root Mean Square Error of Approximation (RMSEA) (Hu & Bentler, 1998). CFI and IFI values greater than .90, and RMSEA values below .08 indicate a good fit (MacCallum, Browne, & Sugawara, 1996; Steiger, 2007). Moreover, a confidence interval can be computed for the RMSEA. The value of the 90% confidence interval is comprised between 0.05 and 0.08 (Steiger, 1990). Although there is no clear guideline as to the value of the ratio between the chi square and its degrees of freedom, a value less than 5 is preferred (see Kline, 2010). Finally, RMSR is a measure of the average residual variances and covariances. It is therefore preferable that it be low. Here again, the norms are empirical. According to Rupp and Segal (1989), a value between .05 and .10 is correct. Hu and Bentler (1998) suggest that these indices are among those that are most relevant to assessing the inadequacy of a model.

Results

Preliminary Analyses

Inspection of skewness and kurtosis indices for all study proved to be normal, with values ranging from -0.09 to -0.72 and -0.04 to -0.72, respectively (Tabachnick & Fidell, 2001). Means, standard deviations, and Cronbach alpha coefficients for all measures are presented in Table 1. All measures had an acceptable level of internal consistency with all values above .70 (excepted for the subscales trait pathways and state agency; $\alpha = .69$). The Pearson correlations between all variables are shown in Table 1. As expected, trait hope and state hope were significantly correlated ($r = .43, p < .001$) and both trait hope and state hope were significantly correlated with perceived ability ($r = .30, p < .001$; and $r = .45, p < .001$, respectively). The results also confirmed the positive and moderately strong link between perceived ability and grade in PE ($r = .56, p < .001$), and between state hope and grade in PE ($r = .47, p < .001$). However, results showed that trait hope was marginally and positively related to GPE ($r = .13, p = .065$).

Table

Bivariate correlations, means, standard deviations and Chronbach's Alpha for all measures

	1	2	3	4	5	6	7	8	M	SD	Alpha
1. Trait Pathways	-								18.2	3.26	.69
2. Trait Agency	.38**	-							17.8	3.39	.74
3. Trait Hope	.82**	.84**	-						36.0	5.51	.76
4. Perceived Ability	.21**	.30**	.30**	-					33.4	8.65	.86
5. State Pathways	.40**	.32**	.43**	.34**	-				13.4	3.05	.72
6. State Agency	.29**	.27**	.34**	.46**	.61**	-			13.3	2.85	.69
7. State Hope	.39**	.33**	.43**	.45**	.90**	.89**	-		26.7	5.29	.80
8. GPEC	.07	.14*	.13	.56**	.41**	.43**	.47**	-	14.7	3.31	-

N = 216; ** $p < 0.001$; * $p < 0.05$

Main Analyses

The model tested in the present study was composed of 5 latent variables (i.e., perceived ability, agency state, pathways state, agency trait, pathways trait). Two second-order latent variables were estimated (i.e., state and trait hope) by combining agency and pathways components, in order to respect the original model of Snyder's hope theory (Snyder et al., 1991). As shown in Figure 1, each first-order latent variable had three, four, or five indicators. The five items of The Specific Perceived Ability scale were used as indicators of the perceived ability factor. Similarly, the four pathways items from the Dispositional Hope Scale were used as the indicators of the trait pathways factor. The four agency items from the DHS were used as the indicators of the trait agency factor. Similarly, the three pathways items from the State Hope Scale were used as the indicators of the state pathways factor. Finally, the three agency items from the SHS were used as the indicators of the state agency factor (Figure 1). One measured variable completed the tested model as indicator of achievement (i.e., GPEC). Finally, trait pathways and agency defined a second-order variable corresponding to trait hope, whereas state pathways and agency defined a second-order variable representing state hope.

In order to test the hypothesized model, a total of 5 paths were specified: two between trait and state hope and GPEC, two between perceived ability and state hope and GPEC, and one between state hope and GPEC. The results showed that the model had an acceptable fit to the data but could be improved, $\chi^2 (df = 162) = 332.95, p = .001$, normed $\chi^2 = 2.06$, and other fit indices were acceptable, CFI = .89, IFI = .89, and RMSEA = .07 [.06–.08]. Based on modifications indices, two error covariance coefficients were added between items 4 and 5 from perceived ability scale, and between items 5 and 6 from Dispositional Hope Scale (see Figure 1). These two error covariance paths were judged to be theoretically sound given that items had similar wording. Results revealed a better model fit, $\chi^2 (df = 160) = 283.34, p = .001$, normed $\chi^2 = 1.77$, and the other fit indices were acceptable, CFI = .92, IFI = .92, and RMSEA = .06 [.05–.07]. Results revealed that all paths of the tested model were significant. As shown in Figure 1, the results showed that trait hope positively predicted perceived ability ($\beta = .55$) and state hope ($\beta = .50$). In addition, perceived ability positively predicted state hope ($\beta = .32$) and GPEC ($\beta = .46$). Finally, state hope significantly predicted GPEC ($\beta = .26$).

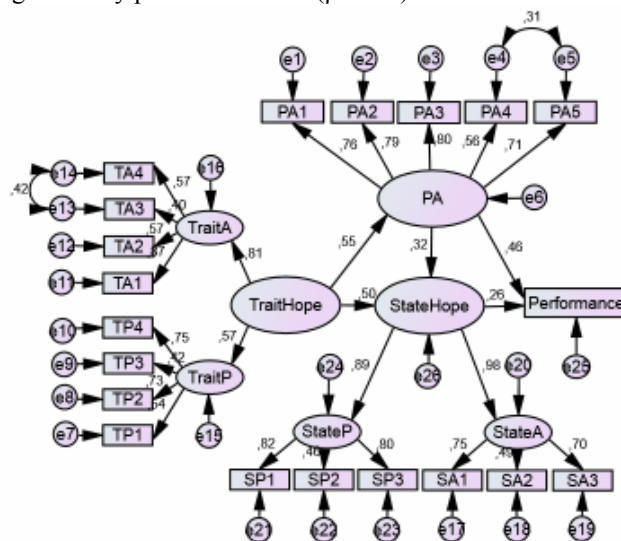


Figure 1. Path model of the relationships between perceived ability, state hope and grades in PE. *Note:* Standardized coefficients are all significant at $p < 0.001$.

Indirect effects

Indirect effects were investigated to further test the mediating role of perceived ability between trait hope and state hope, the mediating role of perceived ability and state hope between trait hope and GPEC, and the mediating role of state hope between perceived ability and GPEC. Consequently, bootstrapped confidence interval estimates of the indirect effect were calculated to confirm the significance of mediations (see Preacher & Hayes, 2008). Bootstrapping is a statistical method that randomly constructs a number of resamples of the original sample in order to estimate parameters. In the present study the 95% confidence interval of the indirect effects was obtained with 5000 bootstrap resamples. Using bootstrap methods to estimate indirect effects is especially recommended in small-to-moderate samples (Shrout & Bolger, 2002). It should be noted that the indirect effect is significant at $p < .05$ if the 95% confidence intervals do not include the value of zero. In the present study, the confidence interval was bias corrected given that this correction is believed to improve power and Type 1 error rates (MacKinnon, Lockwood, & Williams, 2004). Results confirmed the mediating role of perceived ability between trait hope and state hope ($\beta = .18$; CI = .03–.34). In addition, results confirmed the mediating role of perceived ability and state hope between trait hope and GPEC ($\beta = .43$; CI = .29–.58). To distinguish the indirect effect through perceived ability from the indirect effect through state hope, the phantom model approach was used (see Macho & Ledermann, 2011, for the detailed procedure). Results confirmed the mediating role of perceived ability between trait hope and GPEC ($\beta = .30$; CI = .20–.41), as well as the mediating role of state hope between trait hope and GPEC ($\beta = .13$; CI = .05–.30). Finally, results confirmed the mediating role of state hope between perceived ability and GPEC, ($\beta = .085$; CI = .01–.21).

Discussion

The main purpose of the present research was to test a model that described how hope (in both trait and state forms) and perceived ability in sport context influence achievement in PE. Results revealed that state hope and perceived ability had a direct effect on GPEC. Moreover, perceived ability also influenced GPEC through the mediation of state hope, and trait hope had an indirect effect on grade through state hope and perceived ability.

Distinct effect of trait and state hope on achievement

The present research provides a better understanding of the process through which hope impacts achievement, and specifically how trait and state hope are distinctly involved. Results revealed an indirect effect between trait hope and achievement. This is similar to results of previous research in which trait hope predicted performance, through the mediation of state hope (Chen, Gully, Whiteman, & Kilcullen, 2000; Curry et al., 1997; Peterson et al., 2006). The absence of direct link between trait hope and performance may potentially be explained by the contextualized and specific nature of the way performance is measured in physical education. Indeed, because trait hope reflects a general and global level, which is applicable to various situations, this level of hope may not be necessary linked directly with a performance in a specific context like sport or physical activity. Hope can be considered as a hierarchical system of beliefs and hopeful thoughts can occur at various levels of abstraction (Lopez et al., 2009). Consequently, general level (i.e., trait) of hope may influence domain specific hope levels (i.e., domains, state). This highlights a potential hierarchical model of hope. Moreover, the correlation between trait hope and GPEC was not significant ($r = .13$, $p = .065$) but of similar size as the findings of Peterson et al. (2006) which revealed a weak significant correlation coefficient. This result suggesting that trait hope is probably not a great predictor of performance in specific context or task unlike state hope. Only the study of Curry et al. (1997) showed superior effects of trait hope relative to state hope on performance in sport context. However, in this study it was first hypothesized that dispositional hope would predict better running times, and that, in turn, state hope measured before performance would increase the predictions. The hierarchical regression revealed that dispositional Hope Scale scores (were entered at Step 1) significantly predicted better performance. Entered at step 2, State Hope Scale scores tended to augment the prediction. When the simple correlations coefficients (with faster running performances) were compared, dispositional hope had a slightly higher correlation coefficient than state hope. It is important to note that this study is based on a sample of 9 female subjects, which can be a bias to the reliability and reproducibility of results. Moreover, the lack of connection between trait hope and performance in our study is probably caused by the fact that we also measured state hope, which seems to be a better predictor of achievement in a specific context. Thus, more studies are necessary to understand the potential malleability of hope and the possibility to increase state hope sustainably by brief and timely interventions.

The mediating effect of state hope

The present findings confirm the role of perceived ability, in the physical education context, to explain achievement (e.g., Eccles & Wigfield, 2002). In fact, perceived ability had a direct effect on GPEC as well as an indirect effect through state hope, thereby confirming the results of previous studies (Curry et al., 1997; Peterson et al., 2006). In fact, results of Curry et al. (1997) study revealed that perceived ability of athletes was a stronger predictor of performance than state hope. Furthermore, our results highlighted the mediating effect of state hope

in the relationship between trait hope and GPEC, and the partial mediation between perceived ability and GPEC. Moreover, results revealed that trait hope had a direct effect on perceived ability in sport context, confirming the importance of having a high level of trait hope to perceived oneself as competent (Curry et al., 1997; Snyder et al., 1997). Similar results have been obtained in the present research and in Curry et al. (1997) despite examining different populations. On the one hand, Curry et al.'s study was dealing with performance in the domain of high performance in sports. On the other, the present study examined, performance in the domain of education. It is thus safe to assume that participants may not be engaged at a comparable level between both studies. Despite these differences, we have observed similar results and this is particularly encouraging. Even if perceived ability predicted achievement during physical education classes, results showed that state hope is directly associated with performance at school. State hope could thus be a key variable to increase performance. Accordingly, interventions could be designed to enhance this malleable level of hope (Davidson et al., 2012; Feldman, Davidson, & Margalit, 2014; Feldman & Dreher, 2012) and, consequently, improve the chances for students to have good grades and performances. In a previous study, Peterson et al. (2006) have manipulated levels of state hope and established its causal role in performance. However, this relationship requires to be explored further in order to generalize these results to other populations. For example, it will be interesting to focus on the potential effects of success expectations in a particular domain in the relationship between perceived ability, state hope, and performance.

Limitations and future directions

Although the present results provided support for the hypothesized model, some limitations should be acknowledged and kept in mind when interpreting the findings. To date, no studies have investigated the domain of PE with Snyder's hope theory and the results we have obtained are promising. Nevertheless, this study comprised a modest sample of participants. Accordingly, hypotheses should be tested with a larger sample. Moreover, the same hypotheses should be tested in other subjects than PE such as reading, writing, and mathematics. As with all correlational data, these results must be interpreted cautiously insofar as predictor variables (e.g., hope, perceived ability) were not manipulated. Although a reciprocal causal link is not plausible given the longitudinal design (e.g., final students' GPEC cannot have caused perceived ability or hope at the beginning of the cycle), it is impossible to be certain that all relevant variables have been taken into account. Thus, the ascertained links between the variables can be due to other variables, which have not been measured (see Judd & McClelland, 1989). Among the omitted potential variables, it would have been interesting to have an objective indicator of the students' ability in PE and to assess other personality variables such as self-esteem, anxiety, or negative affectivity. Thus, future researches should control for manipulate these variables in laboratory protocols for example to test effects of hope on cognitive, affective, behavioural and physiological variables. Moreover, along these lines, teachers' evaluations of student are not without bias and errors. As emphasized by Jussim (1991), marks can be biased by the teacher's beliefs or his/her a priori opinion. Consequently, performance evaluations by teachers may have been underestimated or overestimated. Future studies should have recourse to additional performance and similar indicators (e.g., one performance in one physical activity) to improve standardization measurement of performance.

Moreover, additional studies should focus on how hope may vary in time and context, and how is it possible to modify state hope to impact key outcomes such as performance, perceived ability, self-confidence, and well-being. Yet, there are only few studies addressing the effects of increased state hope thanks intervention programs on performance, or measuring the durability of the effect over time (Lopez et al., 2009). Otherwise, no study has focused on the context of sport and performance and few studies have investigated the plausibility of a quick change in the level of state hope and its potential impacts on the performance directly after the enhancement session. To our knowledge, only a few studies (e.g., Davidson et al., 2012; Feldman et al., 2014; Feldman & Dreher, 2012) attempted to increase the hope level in a short intervention session.

Conclusion

To resume, the results of this study confirmed our hypotheses. Conclusions are consistent with previous research on hope, and its effects on achievement in school and in sport contexts. They show how hope may be a useful variable to enhance the performance and achievement in domains such as school or sports, but probably with better effects at a state level than a trait one. Consequently, implementing hope in these different domains seems to be a promising way to increase the quality of performance.

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