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Students' achievement goals, emotion perception ability and affect and performance in the classroom: a multilevel examination

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Konstantinos Kafetsios[c]

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Performance at school is affected not only by students' achievement goals but also by emotional exchanges among classmates and their teacher. In this study, we investigated relationships between students' achievement goals and emotion perception ability and class affect and performance. Participants were 949 Greek adolescent students in 49 classes and their Greek language and mathematics teachers. Results from multilevel analyses indicated that students' mastery-approach and performance-approach goals were positively related to positive affect whereas performance-avoidance goals were negatively related to positive affect. At class-level, relationships between achievement goals and affect were moderated by students' emotion perception ability. These findings highlight the importance of emotion abilities and their role in motivational processes for class-level outcomes.

Keywords: achievement goals; emotion perception ability; students' motivation; positive and negative affect; self-efficacy

What is the main goal that students aim to achieve at school? Some students may strive for learning and improvement (i.e. mastery-approach goals). Some others may focus on outperforming their peers (i.e. performance-approach goals), while others may opt for avoiding doing worse than their classmates (i.e. performance-avoidance goals). Past research indicates that each of these achievement goals is linked in distinct ways with cognitive, behavioural and affective outcomes. Mastery-approach goals tend to yield the most adaptive outcomes (Hulleman, Schrager, Bodmann, & Harackiewicz, 2010; Pekrun, Elliot, & Maier, 2006, 2009), where as performance-avoidance goals are the least adaptive, with performance-approach goals providing a mixed pattern of results (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Midgley, Kaplan, & Middleton, 2001).

Based on the premise that emotions prevail in classrooms (Meyer & Turner, 2002), and that students' affect can influence motivational processes and outcomes (Carver, 2004; Linnenbrink & Pintrich, 2002; Pintrich, 2003), we examined the extent to which students' emotion perception ability (the ability to accurately perceive their teachers' and classmates' emotions) could relate to students' achievement

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goals, positive and negative affect and school performance. Considering that the classroom context can influence motivational processes and outcomes (Pintrich & Maehr, 2004) and that the teacher holds a pivotal role in that respect (Brophy, 2008), we also examined teachers' self-motivation, nesting students' achievement goals, emotional capabilities and outcomes within classes.

Achievement goals

Achievement goals are defined as the higher order reasons for which students strive to attain success (Dweck & Leggett, 1988), and their classification depends on how students define and valence competence (Elliot, 1999). *Mastery-approach* goals correspond to the objective of learning or reaching a certain level of attainment. Students who endorse mastery-approach goals define competence based on self-referenced or task-referenced standards and believe that they possess the required skills to attain success (i.e. they valence competence in a positive way). *Performance-approach goals* represent the desire to surpass the others. Students who endorse performance-approach goals define success with normative criteria and valence competence positively. On the other hand, *performance-avoidance goals* reflect the students' aim not to be outperformed by the others. Students who endorse performance-avoidance goals define competence based on normative criteria while they valence competence negatively – (i.e. they perceive that they lack the necessary competence to succeed). Finally, *mastery-avoidance* goals correspond to the objective of avoiding stagnation or failure in achieving a certain level of attainment. Students who endorse mastery-avoidance goals valence competence negatively and define it with task- or self-referenced standards. Mastery-avoidance goals were not considered in the present study as this type of goals seems to prevail less among adolescents (Elliot, 1999).

Numerous studies have indicated that mastery-approach goals constitute the most adaptive motivational pattern and have been associated, among others, with more positive affect (e.g. Linnenbrink, 2005) and better performance at school (Dweck, 1986; Linnenbrink, 2005; Patrick & Ryan, 2008). Compared with mastery-approach goals, performance-avoidance goals have been linked to negative affect (Pekrun et al., 2009; Zusho, Pintrich, & Cortina, 2005) and lower grades (Senko & Harackiewicz, 2005). Finally, performance-approach goals have been positively associated with certain outcomes such as higher grades (Daniels et al., 2009; Durik, Lovejoy, & Johnson, 2009; Wolters, 2004), self-efficacy (Zusho et al., 2005) and well-being (e.g. Linnenbrink, 2005), although some studies (e.g. Ryan, Patrick, & Shim, 2005) have failed to confirm these relationships (see also Shim & Ryan, 2005).

In an attempt to delineate the somewhat inconsistent findings, some researchers have examined individual factors that account for relationships between achievement goals and outcomes (Efklides, 2011), while others consider contextual characteristics (Barron & Harackiewicz, 2001; Murayama & Elliot, 2009). In the present study, we examined an individual characteristic – students' emotion perception ability (the ability to accurately recognise others' emotions; Mayer & Salovey, 1997) and contextual features (teachers' self-motivation during everyday teaching in the classroom; Bandura & Schunk, 1981) as factors that may help better understand links between achievement goals and affective and performance outcomes.

Importantly, a multilevel analytic approach allowed to account for group-level variability in all those associations.

Given that our approach stresses the social and communicative functions of emotion (Keltner & Haidt, 2001), we took into account the emotional exchanges among students and between teacher and students in the classroom environment. As we understand it, the classroom acts as mini regulatory system that comprises student–teacher interactions and relationships, instructional beliefs and practices, pedagogical approaches, classroom management, the nature of academic work and motivational climate (Brown, Kanny, & Johnson, 2014).

Especially in secondary education, the classroom context can be regarded as a social entity in which teachers' behaviour plays a significant role for adolescents' motivational dynamic (Maulana, Opdenakker, Stroet, & Bosker, 2013). As many of students' school experiences occur during class, teachers can influence students' motivational processes and outcomes (e.g. McNeely, Nonnemaker, & Blum, 2002; Roeser, Midgley, & Urdan, 1996). On the other hand, teachers' emotional abilities and self-motivation can influence teacher–student and student–student relationships, and social context of the classroom (e.g. Brophy, 1999; Fraser & Walberg, 1991).

Students' emotion perception ability and teachers' self-motivation

In this study, we focused on students' emotion perception ability for two reasons. First, because the affective cues that emotion perception ability generate can interact with motivational processes (Carver, 2004; Linnenbrink & Pintrich, 2002). In particular, given that affect is suggested to precede (Linnenbrink & Pintrich, 2002) or regulate motivational processes (Carver, 2004), we presumed that emotion perception as an ability provides a richer input of affective states and can thus foster motivational processes. Second, emotion perception ability is an important facet of emotional intelligence, a set of emotion abilities that have profound effects on students' motivation and educational outcomes (Barchard, 2003; Brackett et al., 2008; Qualter, Whiteley, Hutchinson, & Pope, 2007). Therefore, we propose that students' capability to recognise the emotional cues transmitted by others during social interactions in classrooms can set in action affective processes which in turn influence one's motivation (Carver, 2004) and behavioural responses (Denham et al., 2003; Ekman, 2003).

Specifically, we explored whether, in conjunction with achievement goals, emotion perception ability relates to positive and negative affect. We also focused on teachers' self- motivation because teachers play a prominent role in the classroom (Patrick, Ryan, & Kaplan, 2007), and because teachers' self-motivation facilitates students' positive affect and performance through the support and the positive reinforcement they provide to their students (Gibson & Dembo, 1984).

In our analysis, we also took into account students' self-efficacy, that is, students' beliefs that they have the ability to succeed in class-related tasks (Bandura, 1997; Midgley et al., 2000). We included self-efficacy as a control variable, because past research indicated that self-efficacy predicts endorsement of approach achievement goals (e.g. Cury, Elliot, Da Fonseca, & Moller, 2006), and is positively related to positive emotions (Bandura, 1997; Creed, Muller, & Patton, 2003; Lent et al., 2005), and grades (Pietsch, Walker, & Chapman, 2003). Likewise, we controlled for gender differences as previous studies have shown that females have higher emotion perception ability than males (Hall & Matsumoto, 2004).

The present research

The research had four main objectives. First, we examined relationships between achievement goals and affect and performance at school (i.e. grades). Based on prior research (e.g. Linnenbrink, 2005; Pekrun et al., 2009; Zusho et al., 2005), we expected that mastery-approach goals would relate positively and that performance-avoidance goals would relate negatively to positive affect and performance (Hypotheses 1a and 1b); given past research (Daniels et al., 2009; Durik et al., 2009; Hulleman et al., 2010; Murayama & Elliot, 2009; Ryan et al., 2005; Senko & Harackiewicz, 2005; Zusho et al., 2005), we hypothesised that performance-approach goals will be positively associated with both higher grades and self-efficacy (Hypothesis 1c). We had no specific hypothesis regarding links between performance-approach goals and affect as previous studies (e.g. Linnenbrink, 2005; Pekrun et al., 2006, 2009) have yielded inconsistent results.

We further expected emotion perception ability to relate positively to grades as prior research has shown that children high in emotion perception ability use more advanced forms of cognitive activities at school (Rivers, Brackett, Salovey, & Mayer, 2007) (Hypothesis 2a). Emotion perception ability was expected to relate positively to positive affect (Hypothesis 2b) since students with high emotion perception ability can better regulate their negative emotions (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003) and experience more positive affect as they tend to exhibit more pro-social behaviour (Bandura et al., 2003) than students with low emotion perception ability.

Moreover, we explored whether students' emotion perception ability will moderate associations between achievement goals and the outcomes. Our expectations lie on the assumption that people with high emotion perception ability are more sensitive to contextual cues and as a result show more marked changes in affect (Petrides & Furnham, 2003) or motivational processes (Carver, 2004). Extending this line of thinking, we tested whether emotion perception ability moderated the relationship between achievement goals and affect. To the best of our knowledge, no prior research has addressed this issue. We therefore explored whether emotion perception ability and achievement goals would interact with each other (Research Question 1).

Extrapolating from prior work that has shown mastery-approach goals are adaptive regardless of one's ability (Dweck & Leggett, 1988; cf. Kaplan & Midgley, 1997) and assuming that emotion perception ability manifests one's general capabilities in the emotional domain, we explored whether relationships between mastery-approach goals and the outcomes would remain unaffected by students' emotion perception ability. We considered this test an important and intriguing research question because emotion perception ability is presumed to influence general mood which in turn is thought to influence motivational outcomes either independently (Efklides & Petkaki, 2005) or in concert with achievement goals (Linnenbrink & Pintrich, 2002). Therefore, emotion perception ability might be an additional factor that should be considered when studying links between achievement goals and outcomes.

Following the same line of reasoning that emotion perception ability can be seen as a supplementary facet of one's global ability, we explored whether emotion perception ability moderates the relationships between performance-approach goals and outcomes, as there is some evidence suggesting the effects of performance-approach goals are contingent on one's levels of ability (Dweck & Leggett, 1988; cf. Cury et al., 2006).
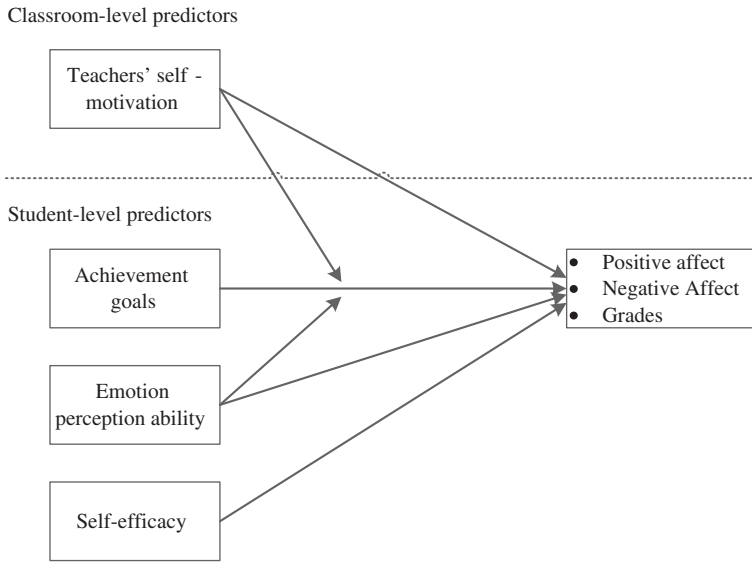
Classroom-level predictors

Figure 1. The hypothesised relations of positive and negative affect and grades as a function of students' achievement goals, self-efficacy, and emotion perception ability and teachers' self-motivation.

Finally, we investigated the degree to which teachers' self-motivation is linked with students' affect and performance and whether the relations of achievement goals and emotions perception ability (and their two-way interactions) to outcomes are moderated by teachers' self-motivation. We hypothesised that teachers' self-motivation would also make students feel at ease and perform better at school (Hypothesis 3). We further examined the extent to which teachers' self-motivation help students' academic functioning. Given the influential role of teachers as authority figures (Brophy, 2008), we hypothesised that students with higher emotion perception ability would benefit more from teachers' self-motivation as emotion perception ability constitutes an important asset during social interactions (DeBusk & Austin, 2011) (Research Question 2). To test our hypotheses and research questions, we used multilevel analysis (as students were nested within classes) to simultaneously estimate individual-level and class-level effects (Figure 1).

Method

Participants

Participants were $N = 949$ students (45.9% males) from 20 secondary schools located in northern Greece. Students belonged to 49 (29 s-grade and 20 fifth-grade) intact classes. The study also included $N = 98$ teachers (49 teachers of Greek language and 49 of Mathematics) who taught in those classrooms (30.6% males; $M_{age} = 41.24$; and SD = 6.67). The sample contained students living in urban, suburban and rural areas.

Procedure

The study was conducted towards the end of first trimester of the school year 2009–2010, was approved by the Greek Ministry of Education and a written consent from

students' parents was obtained in the first place. Students completed the questionnaires into their classrooms within a single teaching hour (45 min) in the presence of a research assistant and the assent of the school principal and the board of teachers. The research assistant first explained the purpose of the study to the students, assuring them that the questionnaires were anonymous and confidential, and that their responses would be used only for the present research purposes. Participants filled in the following questionnaires.

Measures

Achievement goals

We used the Patterns of Adaptive Learning Scales manual (PALS; Midgley et al., 1998) to assess students' endorsement of (a) mastery goals (six items; e.g. 'An important reason why I do my class work is because I like to learn new things'; $\alpha = .83$), (b) performance-approach goals (six items; e.g. 'I want to do better than other students in my class'; $\alpha = .81$) and (c) performance-avoidance goals (five items; e.g. 'An important reason I do my class work is so that I don't embarrass myself'; $\alpha = .69$). Participants indicated their degree of agreement according to a five-point Likert-type scale (1 = *I strongly disagree*; 5 = *I strongly agree*).

Academic self-efficacy

Students' academic self-efficacy was measured through the relevant subscale from the Use of the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1991). Students were asked to evaluate on a seven-point Likert-type scale (1 = *Not true of me*; 7 = *Totally true of me*) their ability to master school-related tasks (e.g. 'I'm certain I can understand the ideas and concepts taught in my class'; $\alpha = .87$).

Emotion perception ability

Student participants rated emotions of facial expressions of two male and female targets (photographs), who expressed basic emotions (i.e. happiness, sadness, surprise, fear, disgust and anger) in frontal view. We utilised 18 facial emotion expressions from Ekman, Friesen and Ellsworth's (1972) classic test. This approach considers facial expressions as evolved signals that broadcast the internal state of target person perceivers (Keltner, Ekman, Gonzaga, & Beer, 2003). For each picture, students identified their selection of which emotion best corresponded to each facial expression from a list of six possible choices. We computed a score for each student by averaging the number of correct answers that each student provided.

Positive and negative affect

A short version of Positive and Negative Affect Schedule (PANAS; Watson & Clark, 1992) was used to gauge students' positive and negative affect. It should be noted that positive and negative affect are considered as the two affective components' dimensions of the well-being (Watson & Clark, 1992). Four adjectives were used to assess positive (i.e. 'strong', 'happy,' 'interested' and 'alert'; $\alpha = .65$) and

another four to assess negative affect (i.e. 'sad', 'scared', 'frustrated' and 'upset'; $\alpha = .64$). Students indicated on 1 (*Totally disagree*) to 5 (*Completely agree*) scale their agreement with each of the above items.

Teachers' self-motivation

For the purposes of this research, we employed the Greek version (Kafetsios & Zampetakis, 2008) of the Use of Emotion (UOE) subscale that is included in Wong and Law's (2002) WLEIS scale. This subscale reflects teachers' self-motivation strength (Bandura & Schunk, 1981), as measures one's self-perceived tendency to motivate oneself to enhance performance (e.g. 'I would always encourage myself to try my best'; $\alpha = .83$). All the items were answered on a scale ranging from 1 (*Totally disagree*) to 7 (*Completely agree*).

Grades

Students reported their grades in Greek language and mathematics at the end of the first trimester and an average score for these two subject matters was computed for each student. Greek language and mathematics were selected because they represent the two most important subject matters in the Greek educational system. The grading system in Greek secondary schools ranges from 1 to 20, with the pass threshold lying at 10.

Results

Descriptive statistics and bivariate correlations of the measured variables appear in Table 1. Preliminary analyses revealed significant gender differences, Wilk's $\Lambda = .869$, $F (8, 901) = 14.06$, $p < .01$ and multivariate $\eta^2 = .11$. Follow-up ANOVA with Bonferroni correction indicated that these differences concerned mastery-approach goals ($F[1, 908] = 12.57$, $p < .01$ and $\eta^2 = .01$), emotion perception ability ($F[1, 908] = 31.78$, $p < .01$ and $\eta^2 = .03$) and grades ($F[1, 908] = 31.10$, $p < .01$ and $\eta^2 = .03$), with females, as compared with males, showing higher levels of mastery-approach goals ($M = 3.16$, SD = .91 vs. $M = 2.94$, SD = 1.02), emotion perception ability ($M = .75$, SD = .12 vs. $M = .70$, SD = .13) and grades ($M = 15.68$, SD = 2.70 vs. $M = 14.65$, SD = 2.89). Consequently, gender was included as a covariate in all the subsequent analyses.

Given that students were nested in classrooms, we set up a series of multilevel models to test our hypotheses. At the student level, we entered gender (uncentred), self-efficacy, the three achievement goals and emotion perception ability (all group mean centred) as predictors of the studied correlates. During preliminary analyses, we also tested for the two-way interactions between the three achievement goals and emotion perception ability, but in the final models, we retained only those which were statistically significant. At the classroom level, we entered teachers' self-motivation (grand-mean centred) as the sole predictor of the dependent variables. For each outcome, we initially modelled the slopes as randomly varying but for the interest of model parsimony, we fixed those that did not significantly vary from class to class (Raudenbush & Bryk, 2002).

The results of the main analyses are shown in Table 2. At the student level, and in support of Hypothesis 1, mastery-approach goals were related positively to

Table 1. Means, standard deviations and bivariate correlations of the measured variables of the study at the student ($N = 1089$) and classroom ($N = 49$) level (lower and upper diagonal, respectively).

Variables	1	2	3	4	5	6	7	8	9	Class-level M	SD
1. Mastery-approach goals	–	.20	–.11**	.38**	.24	.25**	–.15	.03	–.20	3.08	.42
2. Performance-approach goals	.12**	–	.70**	.42**	–.37**	.54**	–.27	–.07	–.31*	2.88	.38
3. Performance-avoidance goals	–.02	.47**	–	.24	–.34*	.58**	–.28*	–.17	–.35*	2.70	.43
4. Self-efficacy	.35**	.27**	.02	–	.03	.46**	–.30**	.40**	–.06	4.96	.42
5. Emotion perception ability	.09**	–.03	–.05	.13**	–	–.41**	.38**	.20	.38**	.73	.04
6. Positive affect	.25**	.22**	.08*	.32**	–.03	–	–.51**	.01	–.46**	3.43	.31
7. Negative affect	–.09**	.02	.08*	–.12**	–.01	–.24**	–	–.03	.16	1.39	.18
8. Grades	.13**	.04	–.05	.37**	.12**	.06	–.08*	–	.23	15.19	1.11
9. Teachers' self-motivation	–	–	–	–	–	–	–	–	–	5.21	.80
Student-level											
M	3.05	2.86	2.69	4.95	.73	3.41	1.40	15.21	–	–	
SD	.97	.97	.94	1.07	.12	.82	.57	2.83	–	–	

*$p < .05$. **$p < .01$.

positive affect and negatively – albeit marginally – to negative affect. Conversely, performance-avoidance goals were inversely related to positive affect and positively related to negative affect. On the other hand, performance-approach goals were positively associated with positive affect. Interestingly, these associations emerged after controlling for self-efficacy, which was positively associated with positive affect and grade average.

Although emotion perception ability was not associated with any of the outcomes (a finding that refutes Hypotheses 2a & 2b), it was found to moderate relationships between mastery-approach goals and positive affect and the relationships of both performance-approach and performance-avoidance goals to negative affect (Research question 1). Specifically, the significant interaction between mastery-approach goals and emotion perception ability on positive affect was significant ($\gamma_{70} = .46$, SE = .18, $p < .05$). This interaction is shown in Figure 2.

A test of simple slopes (Bauer & Curran, 2005) indicated that mastery-approach goals were more strongly related to positive affect when students' exhibited high (i.e.+1 SD) as compared with low (i.e. −1 SD) emotion perception ability ($\gamma_{70 \text{ high}} = .22$, SE = .03, $z = 6.35$, $p < .01$ and $\gamma_{70 \text{ low}} = .11$, SE = .05, $z = 2.21$, $p < .05$, respectively).

Regarding negative affect, there were significant interactions between performance-approach and performance-avoidance goals on the one hand and the emotion perception ability on the other hand ($\gamma_{80} = -.50$, SE = .15, $p < .01$ and $\gamma_{90} = .44$, SE = .17, $p < .05$, respectively). A test of simple slopes (see Figure 3) indicated that performance-approach goals were positively related to negative affect when the emotion perception ability was low ($\gamma_{80 \text{ low}} = .08$, SE = .03, $z = 2.65$ and $p < .01$);

Table 2. Positive and negative affect and grades as a function of students' achievement goals, self-efficacy, and emotion perception ability (at the between-student level) and teachers' self-motivation (at the between-classes level).

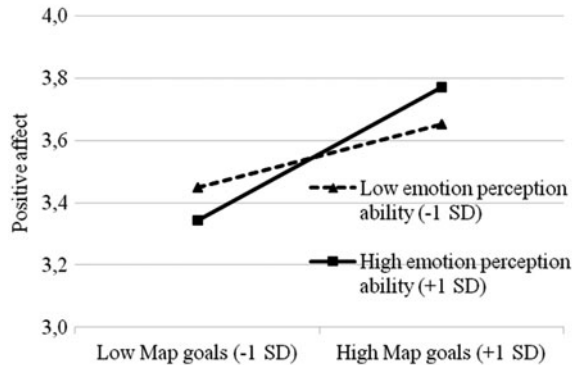| Fixed effects		Positive affect	Negative affect	Grades
Intercept	γ_{00}	3.56 (.05)	1.36 (.03)	14.71 (.19)
Student-level predictors				
Gender	γ_{10}	−.26** (.07)	.07 (.04)	.90** (.20)
Self-efficacy	γ_{20}	.15** (.03)	−.03 (.02)	.96** (.10)
Achievement goals				
Mastery-approach (Map) goals	γ_{30}	.16** (.03)	−.04† (.02)	.00 (.09)
Performance-approach (Pap) goals	γ_{40}	.11** (.03)	.02 (.03)	−.04 (.12)
Performance-avoidance (Pav) goals	γ_{50}	−.06* (.03)	.09** (.02)	−.06 (.12)
Emotion perception ability (EPA)	γ_{60}	.02 (.19)	−.09 (.15)	.42 (.59)
Interactions				
Map goals X EPA	γ_{70}	.46* (.18)	–	–
Pap goals X EPA	γ_{80}	–	−.50** (.15)	–
Pav goals X EPA	γ_{90}	–	.44** (.17)	–
Class-level (contextual) predictors				
Teachers' self-motivation	γ_{01}	−.20** (.07)	.03 (.04)	.23 (.26)
Random effects		Variance components		
Intercept	u_{00j}	.07**	.02**	1.05**
Students' gender slopes	u_{10j}	.12**	–	.56*
Students' Pav slopes	u_{50j}	–	–	.16*
Level 1	r_{ij}	.50	.30	5.87

† ≤ .05. *$p < .05$; **$p < .01$.

Figure 2.   The relation between mastery-approach (Map) goals and positive affect as a function of high vs. low emotion perception ability.

instead, it was not related to negative affect when emotion perception ability was high ($\gamma_{80\ high} = -.05$, SE $= .04$, $z = -1.31$ and $p = .19$).

Also, the test of simple slopes showed that performance-avoidance goals were not related to negative affect when emotion perception ability was low ($\gamma_{90\ low} = .03$, SE $= .03$, $z = 1.15$ and $p = .25$); instead, performance-avoidance goals were positively related to negative affect when emotion perception ability was high ($\gamma_{90\ high} = .14$, SE $= .03$, $z = 4.79$ and $p < .01$). This interaction is shown in Figure 4.

At the classroom level, and contrary to our expectations (which refute Hypothesis 3), teachers' self-motivation emerged as a negative predictor of students' positive affect ($\gamma_{01} = -.20$, SE $= .07$ and $p < .01$), suggesting that students' reported less positive affect in classes where the teachers reported more self-motivation during daily teaching. Also, a significant cross-level interaction emerged for negative affect (not shown in Table 2). In particular, it was found that the relation between self-efficacy and negative affect tended to be stronger for students belonging to classes where the teachers reported more self-motivation suggesting that the relation between self-efficacy and negative affect was negative (i.e. beneficial) for students belonging to classes with teachers reporting low (i.e. -1 SD) self-motivation
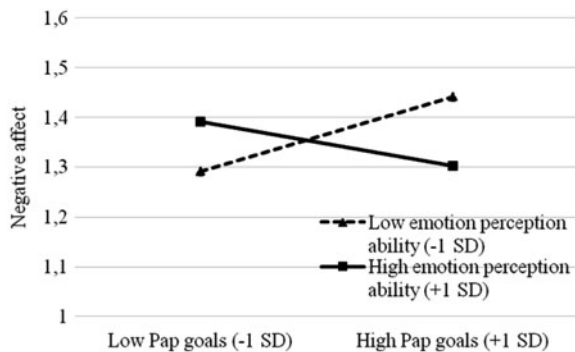

Figure 3.   The interaction between performance-approach (Pap) goals and negative affect as a function of high vs. low emotion perception ability.
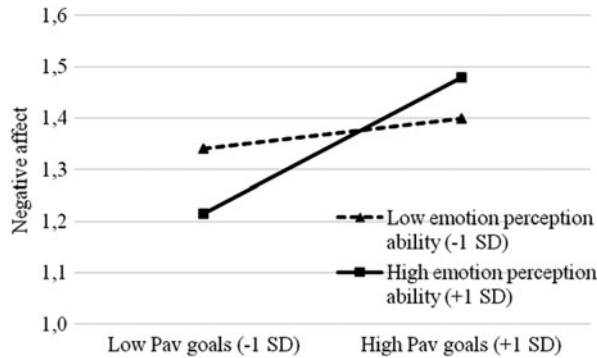
Figure 4. The relation between performance-avoidance (Pav) goals and negative affect as a function of high vs. low emotion perception ability.

($\gamma_{20\ low} = -.10$, SE = .04, $z = -2.85$ and $p < .01$) but not high (i.e. +1 SD) self-motivation ($\gamma_{20\ high} = .03$, SE = .03, $z = 1.08$ and $p > .05$).

Furthermore, a significant cross-level interaction (not shown in Table 2) between teachers' self-motivation and the two-way interaction between mastery-approach goals and the emotion perception ability was found for positive affect ($\gamma_{71} = .48$, SE = .23 and $p < .05$). A test of simple slopes (Bauer & Curran, 2005) indicated that the interaction between mastery-approach goals and the emotion perception ability was significant for students belonging to classes where teachers reported high and average ($\gamma_{71\ high} = .84$, SE = .26, $z = 3.16$, $p < .01$ and $\gamma_{71} = .46$, SE = .18, $z = 2.50$, $p < .05$, respectively) but not low levels of self-motivation ($\gamma_{71} = .08$, SE = .17, $z = .46$ and $p > .05$). In practice, this three-way interaction implies that the positive relation between mastery-approach goals and positive affect was even stronger among students who had high emotion perception ability as long as they were in classrooms with teachers reporting average or high levels of self-motivation.

Finally, a three-way interaction between teachers' self-motivation and students' performance-avoidance goals X emotion perception ability interaction also emerged ($\gamma_{91} = .34$, SE = .16 and $p < .05$). A simple slopes test revealed that the interaction between performance-avoidance goals and emotion perception ability was positive and significant among students belonging to classrooms with teachers characterised by high or average ($\gamma_{91} = .70$, SE = .27, $z = 2.65$, $p < .01$ and $\gamma_{91} = .44$, SE = .17, $z = 2.63$, $p < .01$, respectively) but not low levels of self-motivation ($\gamma_{91\ low} = .17$, SE = .13, $z = 1.27$ and $p > .05$). Interpretation of this three-way interaction suggests that the relation between performance-avoidance goals and negative affect was positive (and thus harmful) for students being high in emotion perception ability and belonging to classrooms where teachers exhibited medium or high levels of self-motivation.

Discussion

A typical classroom is not only characterised by students' striving for achievement but also by emotional exchanges between classmates and between teacher and the students. The present study enriches the existing work on achievement motivation (e.g. Pekrun et al., 2009) by demonstrating that students' emotion perception ability

moderates relationships between achievement goals and class-related positive and negative affect and grades.

In support of Hypothesis 1a, we replicated prior research results (e.g. Pekrun et al., 2006) that mastery-approach goals positively relate to positive affect and inversely (albeit marginally) to negative affect. These findings highlight the adaptive role of mastery goals, since positive affect is considered to facilitate and sustain intrinsic motivation (Isen & Reeve, 2006). Furthermore, as the multilevel analyses revealed, the positive relation between performance-avoidance goals and negative affect underscores its potentially harmful role in students' well-being and aligns well with previous studies (e.g. Pekrun et al., 2009). Likewise, the positive association between performance-approach goals and positive affect replicates prior reports which have shown performance-approach goals to be associated to certain positive emotions such as hope and pride (Pekrun et al., 2006, 2009) and not to deter grades (Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008).

Contrary to our expectations emotion perception ability failed to directly predict positive and negative affect (Hypothesis 2a) or grades (Hypothesis 2b). Perhaps this is because emotional skills are less needed within the Greek educational system which is characterised more by summative assessments, rote memorization (Benincasa, 1997), and high-stakes competitive University entrance exams (Psacharopoulos & Tassoulas, 2004) and less by extensive use of diverse cognitive, behavioural, and affective skills (Soulis & Floridis, 2010). In high school it is possible that other factors than emotion perception ability can better predict students' affect and school performance.

Yet, despite a lack of a direct link between emotion perception ability and outcomes, our study revealed that emotion perception ability moderated associations between achievement goals and outcomes. In particular, the relationship between mastery approach goals and positive affect was even stronger for students exhibiting higher emotion perception ability (but not among students in classes where teachers reported low self-motivation, an issue which is discussed below). As these findings imply, students with higher emotion perception ability seem to experience more positive affect if they endorse mastery-approach goals (as far as they belong to classes in which their teachers are self-motivated).

Moreover, performance-avoidance goals were negatively associated with negative affect among students with low emotion perception ability; in contrast, they were positively associated with negative affect among students with high emotion perception ability. Nevertheless, this moderation was found only among students in classrooms where teachers reported average or high levels of self-motivation.

Why this different pattern of associations between performance-avoidance goals and negative affect? This may be due to the fact that students who endorse performance-avoidance goals and who have high emotion perception ability are more sensitive and in alert of contextual cues, especially in classrooms where teachers are characterised by high self-motivation. Perhaps in such classrooms where teachers are more self-motivated (and thus more active), they communicate more openly their feelings including (dis)approvals and as a result, students with an avoidance orientation and with high ability emotion perception are more susceptible to experiencing negative affect.

On the other hand, performance-approach goals were positively related to negative affect only among students who demonstrated low emotion perception ability. Given that performance-approach goals may be contingent on one's ability levels

(Dweck & Leggett, 1988; cf. Cury et al., 2006), it is likely that emotion perception ability may buffer students from experiencing negative emotions when they endorse performance-approach goals.

To conclude, the moderating role of emotion perception ability on associations between achievement goals and affect denotes its potential importance when studying links between achievement goals and educational outcomes. As our research is the first of its kind, more research is needed to clarify whether emotion perception ability qualifies relations between achievement goals and school-related outcomes. At a broader level, the present study suggests a likely new direction for research that will link the achievement goal perspective with that of emotional intelligence (or aspects of). Future research could also include, along with emotion perception ability, the concept of relatedness need satisfaction (Deci & Ryan, 2008), because relatedness facilitates the process of internalisation, as people can more easily integrate the values and practices of people to whom they feel connected (Ryan & Niemiec, 2009).

Interestingly, the observed associations between achievement goals and affect were found after controlling for students' self-efficacy. The fact that mastery-approach goals as compared with performance-approach goals were more strongly associated with well-being even after taking into account self-efficacy, suggests that the pursuit of mastery-approach goals may be the best avenue for successful schooling (Midgley, Kaplan, & Middleton, 2001). Regarding the positive associations between self-efficacy and outcomes, these should come as no surprise because self-efficacious students feel more confident to cope with school-related demands and therefore are more likely to experience positive affect (Lent et al., 2005) and attain higher grades (Pietsch et al., 2003).

As stated above, the interaction between achievement goals and emotion perception ability seems to depend on whether students were in classes where teachers were characterised by high self-motivation (Research Question 2). This pattern highlights the social dimension of students' emotion perception ability and the key role that teachers play in the classroom, as teachers who are self-motivated seem to facilitate social interactions (Martin & Dowson, 2009; Wentzel, 1999). Perhaps, self-motivated teachers are especially helpful for mastery-approach goal-oriented students with high emotion perception ability.

As our multilevel analyses suggest, classrooms that are taught by teachers characterised by high self-motivation also seem to yield some disadvantages for students characterised by high emotion perception ability and performance-avoidance goals pursuit. In sum, it appears that more affect (either positive or negative) is likely to manifest itself due to the pursuit of achievement goals and emotion perception ability in classrooms with teachers characterised by self-motivation.

Contrary to our expectations, once students' self-efficacy beliefs were taken into account, neither achievement goals, emotion perception ability or teachers' self-motivation predicted school grades. Most likely, as such beliefs are largely shaped from past performance (Bandura, 1997) and thus reflect one's school performance, it should not come as a surprise that self-efficacy emerged as the only predictor of school performance.

Regarding the observed gender differences, we found female students to exhibit higher levels of emotion perception ability, to more strongly endorse mastery-approach goals and to take higher grades than male students. The gender differences in emotion perception ability are in line with previous studies which have shown females to be more sensitive to perceiving others' emotions (e.g. Kafetsios, 2004)

and highlight the necessity to take into account gender when studying students' emotion perception ability. Likewise, the gender differences in mastery-approach goals and grades, conform to past research that has indicated female adolescents to endorse more fervently mastery-approach goals (Middleton & Midgley, 1997; Roeser et al., 1996; Ryan, Hicks, & Midgley, 1997) and to get higher grades than males (Deary, Strand, Smith, & Fernandes, 2007).

Limitations

The present study is not without limitations. First, the cross-sectional design does not permit causal inferences among emotion perception ability achievement goals, and educational outcomes. It can be equally assumed that students who experience positive affect and perform better at school focus more on mastery-approach goals and gradually develop their emotion perception ability. Obviously, bidirectional relationships between emotion perception ability, endorsement of achievement goals and affective outcomes are likely. Future studies with longitudinal designs are needed to examine the directionality of these relationships.

Second, although we acknowledge that the link between mastery-approach goals and positive affect is quite strong and indisputable, our research shows that this link becomes more marked in classrooms where teachers are themselves highly self-motivated. Certainly, more research is needed to clarify on how teachers' emotions made a difference.

Third, by focusing only on emotion perception ability, we have overlooked the whole cognitive processes that comprise other facets of emotional intelligence abilities, such as awareness of emotion in self, UOE to facilitate performance and regulation of emotion (Law, Wong, and Song, 2004; Mayer, Salovey, & Caruso, 2000). Nonetheless, the fact that students' emotion perception ability was found to influence the relationships between achievement goals and outcomes partly attests to the importance of the specific aspect of emotional ability.

Finally, like most standardised tests assessing emotion perception ability through photographic stimuli and categorical emotion decoding labels, our test could be questioned for its ecological validity (Carroll & Russell, 1996). This is because other research that utilises more dynamic methods to assess emotion perception ability (e.g. Kafetsios & Hess, 2013) has indicated that people base their judgements on more dynamic subtle expressions of others' emotions that are open to different interpretations (Ekman, 2003; Motley & Camden, 1988). Therefore, caution is required when generalising the present findings in other population samples from other countries, educational systems and cultural values.

Conclusion

The present study contributes new evidence to the role of aspects of emotional intelligence in motivation in the classroom. To our knowledge, this is one of the first studies to suggest that achievement goals are differentially related to emotion and school performance outcomes depending on students' emotion perception ability and teachers' self-motivation. The results may carry important implications to educational outcomes in terms of intrapersonal and interpersonal dynamics calling for more attention to aspects of emotion abilities when studying links between achievement goals and educational outcomes.

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