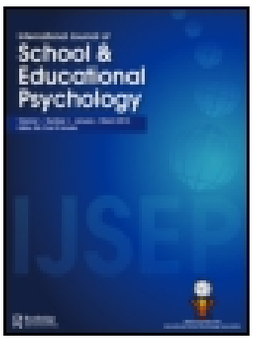

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Do achievement goals mediate the relationship between classroom goal structures and student emotions at school?

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ABSTRACT

It is expected that teacher practices could improve students' emotional state by encouraging the endorsement of adaptive goals. However, the mediation effect of achievement goals in the relationship between classroom goal structures and emotions has never been demonstrated empirically. This study therefore investigated this important issue using a multilevel framework, which is more appropriate for testing contextual effects. The participants were 1,232 students (9th grade) from 72 classrooms. They completed a self-reported questionnaire about their emotions at school, their achievement goals and their perceptions of classroom goal structures. Multilevel analysis showed that students' anger, anxiety, and enjoyment were related to goal structures at classroom level. Only the effects of mastery goal structure on anger and enjoyment were mediated by students' mastery goals. These results highlight the relevance of simultaneously considering personal goals and classroom goal structures using multilevel models. From a practical point of view, these findings mainly support the relevance of classroom mastery goal structure to improve students' emotional well-being.

KEYWORDS

Emotion; classroom environment; learning environment; adolescent; school

Introduction

A growing number of studies attempt to identify factors influencing student emotional outcomes (Hascher, 2010). This rising interest is fueled by two main considerations. Some regard student emotional aspects as important per se for general well-being and academic adjustment (Yi et al., 2019). Others want to gain a better understanding of the key role of the emotional dimension in motivational and learning processes (Linnenbrink & Pintrich, 2004; Meyer & Turner, 2002). Despite this increasing focus on the emotional aspects, much remains to be done (Turner et al., 2003). Achievement Goal Theory seems to be a relevant theoretical framework for anyone with an interest in student emotional outcomes (McLaughlin, 2008; Tuominen-Soini et al., 2008). Indeed, according to this approach, the type of goals pursued by a student will affect his or her emotional reactions during learning activities and these goals, in turn, may be influenced by teachers' practices or discourses (Ames, 1992; Midgley, 2002). More specifically, a learning environment promoting improvement and intellectual development leads students to adopt mastery goals and thereby generates positive emotions. In contrast, a learning environment promoting elitism and social comparison leads students to adopt performance goals and thereby generates negative emotions (Elliott & Dweck, 1988; Kaplan & Maehr, 1999). This initially straightforward theoretical framework appears useful to guide practitioners in the field. However, as the models have been complexified and challenged by contradictory results, a number of questions have arisen that deserve to be clarified. Are performance goals really problematic regarding student emotional outcomes? If not, is a learning environment emphasizing elitism and social comparison really problematic? The literature has struggled to provide a clear picture, partly because most studies have focused on individual goals, neglecting contextual dimensions. In this paper, we review the state of research on this subject and seek to examine both individual and contextual dimensions of the achievement goal model. More specifically, we test the effect of classroom goal structures on different school-related emotions and the potential mediation effect of student achievement goals.

Emotions at school

An emotion is a delimited affective episode including affective, cognitive, motivational, expressive and physiological components and elicited by an event evaluated as

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relevant (Mulligan & Scherer, 2012; Pekrun, 2006). More specifically, different emotions are triggered by different sequences of appraisals. Among the different appraisal dimensions proposed, Pekrun (2006) further developed two dimensions in the educational context: subjective value and subjective control. For example, if a teacher chides an innocent student, this student may assess this situation as negative for himself or herself and out of control, and therefore feels a sense of anger. In another example, when a student works more at home and so performs better in a test, he or she may assess these results as positive for himself or herself and under control, and therefore feel pride. These emotions experienced at school were found to be associated with students' motivation, learning strategies and self-regulation, learning, and achievement (Ahmed et al., 2013; Hascher, 2010; Pekrun et al., 2002, 2017; Ranellucci et al., 2015). Generally speaking, positive emotions, such as enjoyment or pride, were found to be positively associated with academic adjustment. By contrast, negative emotions, such as anxiety, shame, anger, boredom or hopelessness, were found to be negatively correlated with academic outcomes. Some scholars also stress the reciprocal nature of the relationship between emotions and some learning-related variables (Linnenbrink, 2006; Pekrun et al., 2002, 2017). Student emotions could influence motivation and performance at school, but the reverse is also true.

According to the control-value theory of Pekrun (2006), students' emotions are affected by appraisals (control and value), which, in turn, are influenced both by social environment and individual characteristics. Among these individual characteristics, achievement goals are hypothesized to play a key role (Pekrun, 2006) and have been widely studied.

Achievement goals and emotions

Achievement goals are the aims driving students to engage in achievement behavior (Ames, 1992). As a first step, two main categories of achievement goals were identified: mastery and performance goals (Nicholls, 1989). Thereafter, a trichotomous model was proposed, incorporating the approach-avoidance distinction (Elliot, 1999; Middleton & Midgley, 1997). Students pursue mastery goals when they want to understand the learning material, improve their skills, and develop new competences. They pursue performance-approach goals when they want to demonstrate their relative ability compared with others and outperform their classmates, whereas they pursue performance-avoidance goals when they mainly want to avoid seeming less competent than others. A 2 × 2 model including mastery-avoidance goals (Elliot & McGregor, 2001) and later a 3 × 2 model drawing a distinction between task-based, self-based, and others-based goals (Elliot et al., 2011) were also proposed, but the trichotomous model remains the most commonly used in the literature at this time.

The types of goals adopted by students are expected to influence the way they approach and involve themselves in learning activities, but also how they interpret and react to them. Consequently, the endorsement of a type of achievement goal or another goal leads to different patterns of behavior, cognitions, and affect (Ames, 1984; Dweck & Legett, 1988; Nicholls et al., 1985). Different authors have suggested theoretical approaches to explain the link between student achievement goals and affective outcomes.

According to the achievement goal theory (Elliott & Dweck, 1988; Kaplan & Maehr, 1999; Turner et al., 1998), students pursuing performance goals would feel more negative emotions, while students pursuing mastery goals would feel more positive emotions. Indeed, when a student pursuing performance goals encounters difficulties, the learning activity may be perceived as threatening his or her sense of competence, and so cause negative feelings. As success is defined in comparison with others, only very few people may achieve the objective to be the best. Consequently, the probability of regarding a learning activity as a failure is high. And even the best students may live in anxiety about losing their status. On the other hand, when a student endorsing mastery goals encounters difficulties, the probability that he or she interprets it as the result of a lack of effort is higher. A difficult activity is not seen as a threat for the self but more as a challenge. The probability of experiencing success is also higher because each student may improve his or her competences, whatever the performance level of the other students. Consequently, the probability of feeling positive emotions is higher than when striving for performance goals (Jagacinski & Nicholls, 1987).

Following the incorporation of the approach-avoidance distinction into the goal theory (Elliot, 1999), Linnenbrink and Pintrich (2002) specified the assumptions about the relationships between achievement goals and affective outcomes. In their view, performance-approach goals are not linked to positive emotions, while performance-avoidance goals are negatively linked to them. Moreover, both performance-approach and performance-avoidance goals were supposed to be positively associated with negative emotions.

However, according to Pekrun et al. (2006), the distinction between positive and negative emotions is

not sufficient to reflect the diversity of discrete emotions and, particularly, the different underlying processes. In addition to the valence of emotions, it is necessary to consider another dimension, the objet focus. Indeed, some emotions are associated with the act of carrying out an activity (enjoyment or boredom, for instance), while others are associated with the anticipated or retrospective outcome of a task (anxiety or pride, for instance). Pekrun et al. (2006) suggest that the different achievement goals pursued by students lead to different appraisals, thereby triggering different types of emotions. Goals oriented toward improvement and learning would be linked to activity-related emotions, while goals oriented toward social comparison and performance would be linked to outcome-related emotions. More specifically, they assume that mastery goals are positively related to positive activity-related emotions (enjoyment, interest) and negatively related to negative activity-related emotions (boredom, anger), while performance-approach goals are positively associated with positive outcome-related emotions (hope, pride) and performance-avoidance goals are positively associated with negative outcome-related emotions (anxiety, hopelessness, shame).

In conclusion, at the theoretical level, there is agreement on the positive influence of mastery goals on some positive emotions, such as enjoyment or interest, and on the deleterious effect of performance-avoidance goals on some negative emotions, such as anxiety or shame. However, these different approaches disagree on the expected effect of performance-approach goals (Midgley et al., 2001). According to the "classic" approach, performance-approach goals are positively linked to negative emotions and not linked to positive emotions, whereas, according to the approach of Pekrun et al. (2006), performance-approach goals are positively linked to some positive emotions such as hope or pride and not linked to negative emotions.

From an empirical point of view, many studies have investigated the relationship between student achievement goals and emotions (for reviews, see Huang, 2011; Linnenbrink-Garcia & Barger, 2014). Concerning student mastery goals, numerous studies found a strong and positive correlation with student enjoyment and a negative link with boredom. However, some authors also found that students with a higher level of mastery goals reported more pride and less anxiety, anger, or shame (Daniels et al., 2009; Goetz et al., 2016; Huang, 2011; Mouratidis et al., 2009; Pekrun et al., 2009, 2006; Putwain et al., 2013; Shih, 2008; Sun et al., 2020; Tanaka & Murayama, 2014). The few studies using the 3 × 2 model suggest that this beneficial effect of mastery goals on student emotional functioning may be due more to the endorsement of task-based goals rather than self-based goals (Flanagan et al., 2015; Lüftenegger et al., 2016).

Regarding performance-approach goals, this type of goal seems less linked to student emotions, although a weak positive association with student anxiety was found in the meta-analysis of Huang (2011). However, in their experimental study, Pekrun et al. (2014) found that students with higher performance-approach goals feel less anxious. Finally, some studies have also found a positive correlation between performance-approach goals and enjoyment or pride but also with anger or shame (Daniels et al., 2008; Goetz et al., 2016; King et al., 2012; Mouratidis et al., 2009; Pekrun et al., 2006, 2009; Shih, 2008; Sun et al., 2020).

With regard to performance-avoidance goals, a strong positive relationship with student anxiety was consistently found. To a lesser extent, some studies also found a positive correlation with anger, shame or boredom, as well as a negative link with pride (Goetz et al., 2016; Huang, 2011; Pekrun et al., 2006, 2009, 2014; Putwain et al., 2013; Shih, 2008; Sun et al., 2020).

To sum up, the available evidence supports the expectations shared by all theoretical approaches. Students who focus on improvement and ability development feel more enjoyment, while students who engage in achievement behavior to avoid seeming the poorest performing students feel more negative emotions, mainly anxiety. As expected in Pekrun and colleagues' model (2006), anger and boredom are also mainly linked to a low level of mastery goal, and pride to a high level of performance-approach goal. It seems that this approach, taking distinctive features of discrete emotions into account, could be relevant for making more specific assumptions. However, results have shown that some emotions are linked to several student achievement goals. This is the case for pride, anger, and anxiety, which are related, to different extents, to the three achievement goals. Finally, it should be noted that empirical results do not provide a clear answer to the greatest theoretical disagreement. In fact, it is not possible to assert that students with a higher level of performance-approach goal feel more or less anxious than others. Beyond the emotional outcomes, the effects of performance-approach goals are a topic of debate among researchers (see Elliot & Moller, 2003; Midgley et al., 2001).

From a practical point of view, it is useful to understand the relationship between student achievement goals and emotional outcomes given its potential as a lever for improving students' emotional experience at school (Kaplan & Maehr, 1999). Indeed, student

achievement goals are themselves supposed to be influenced by the school environment, especially school or classroom goal structures (Midgley, 2002).

Goal structures and personal achievement goals

According to achievement goal theory, individual goals are influenced by goal structures, which refer to the goal-related messages made salient in the learning environment (classroom, school, or other) by instructional practices, teacher discourse or organizational features (Ames, 1992; Midgley, 2002). Two goal structures are usually differentiated: a mastery goal structure in which learning, improvement, and intellectual development are emphasized, and a performance goal structure in which social comparison, competition, and elitism are emphasized. The first is expected to drive students to adopt mastery goals, while the second is expected to drive students to adopt performance goals (Anderman & Maehr, 1994; Kaplan & Maehr, 1999). Similarly to achievement goal model development, some researchers used a three-dimensional model (Dresel et al., 2013; Michou et al., 2013; Murayama & Elliot, 2009), a four-dimensional model (Peng et al., 2018) or a six-dimensional model (Méndez-Giménez et al., 2017) for goal structures. The dichotomous model, however, remains more common in the literature (for example, Bong, 2005; Gonida et al., 2009; Polychroni et al., 2012; Urdan, 2004b; Urdan & Midgley, 2003) and represents the lowest common denominator of these different frameworks.

Surprisingly, empirical studies have only belatedly looked at the link between goal structure and student achievement goals. Results regarding this association are synthesized in a recent meta-analysis (Bardach et al., 2020). However most of these studies explored the relationship between individual student perception of contextual goal structures and their own goal orientations. To take into account this subjective perception is fundamental to understanding the process at the individual level, but shows limitations when the aim is to draw conclusions regarding environmental effect. Indeed, this perception could be influenced by student characteristics (Wolters, 2004) such as gender (Roeser et al., 1996) or even their own existing motivational orientation (Tapola & Niemivirta, 2008). To make practical recommendations about instructional and organizational practices, it is important to obtain a more unbiased measure of the learning environment, better reflecting its contextual and collective nature. Multilevel analysis makes this possible by taking into account the aggregation at the contextual level of all perceptions of students from the same environment (Lüdtke et al., 2009; Marsh et al., 2012). In this perspective, students from the same class or school are seen as multiple observers of their learning environment and the mean of their assessments can be considered a reliable indicator of this environment (Fauth et al., 2019; De Jong & Westerhof, 2001). Few studies have used multilevel models but it seems relevant to highlight their results. Indeed, these studies provide more valid conclusions about the link between contextual goal structures and individual goal orientations.

Regarding student personal mastery goals, empirical studies have actually shown a positive and large relationship with individual perceptions of classroom (or, more rarely, school) mastery goal structure (Bardach et al., 2020; Bong, 2005; Friedel et al., 2007; Galand & Philippot, 2005; Gonida et al., 2009; Kaplan & Midgley, 1999; Michou et al., 2013; Peng et al., 2018; Polychroni et al., 2012; Roeser et al., 1996; Urdan & Midgley, 2003; Young, 1997). Multilevel analyses have also highlighted the positive effect of aggregated student perceptions of mastery goal structure on student mastery goals (Bardach et al., 2018; Ciani et al., 2010; Dresel et al., 2013; Galand et al., 2006; Luo et al., 2011; Méndez-Giménez et al., 2018; Murayama & Elliot, 2009; Urdan, 2004b). Moreover, some results also indicated a negative association between individual perception of performance goal structure and student mastery goals (Kaplan & Midgley, 1999; Midgley et al., 1995). Among multilevel studies, some also found this relationship with performance goal structure at classroom level (Anderman & Young, 1994; Ciani et al., 2010), but others did not (Dresel et al., 2013; Luo et al., 2011; Méndez-Giménez et al., 2018; Murayama & Elliot, 2009; Urdan, 2004b).

With regard to student performance-approach goals, most studies showed a positive link with individual perception of performance goal structure (Bardach et al., 2020; Galand & Philippot, 2005; Michou et al., 2013; Midgley et al., 1995; Peng et al., 2018; Polychroni et al., 2012; Urdan, 2004a) or performance goal structure aggregated at contextual level in multilevel analyses (Dresel et al., 2013; Luo et al., 2011; Méndez-Giménez et al., 2018; Urdan, 2004b). However, other studies did not find any significant relationship (Friedel et al., 2007), among them some multilevel studies (Galand et al., 2006; Murayama & Elliot, 2009). Some researchers exploring the relationship between individual perception of mastery goal structure and student performance-approach goals found a positive association (Bong, 2005; Friedel et al., 2007; Midgley et al., 1995; Young, 1997). These results suggest that the more a student perceives his or her learning environment as emphasizing mastery and learning, the more he or she will adopt performance-approach goals. According to Bardach et al. (2020), this relation could be explained by the

relationship between performance-approach goal and mastery-goal. For their part, multilevel studies investigating this relationship indicated mixed results: either a weak and positive effect (Dresel et al., 2013; Méndez-Giménez et al., 2018), or a weak and negative effect (Urdan, 2004b), or no significant effect at all (Bardach et al., 2018; Luo et al., 2011; Murayama & Elliot, 2009).

Lastly, regarding student performance-avoidance goals, some studies showed a positive link with individual perception of performance goal structure (Bardach et al., 2020; Galand & Philippot, 2005; Gonida et al., 2009; Peng et al., 2018; Polychroni et al., 2012; Urdan, 2004a; Urdan & Midgley, 2003). Among multilevel studies that addressed this link, some indicated a positive relationship with performance goal structure aggregated at contextual level (Luo et al., 2011; Urdan, 2004b), while another did not show any significant link (Murayama & Elliot, 2009). No study has shown a potential link between performance-avoidance goals and (perceived or aggregated) mastery goal structure with the exception of a recent meta-analysis that found an unexpected small-to-trivial relation (Bardach et al., 2020).

In conclusion, empirical studies suggest that mastery goal structure is indeed positively associated with student mastery goals and that performance goal structure is associated with a higher level of performance-approach goals. However, more research, especially multilevel studies, is needed to clarify the potential effects of mastery goal structure on student performance-approach goals, and of performance goal structure on student mastery goals. Moreover, it would seem to be necessary to further investigate potential relationships between contextual goal structures and student performance-avoidance goals.

Mediation effect of achievement goals

Given that goals emphasized in the classroom seem to influence students' adoption of achievement goals and that these personal goals are linked to the frequency of some emotions, it is expected that achievement goals will mediate the relationship between goal structure and emotions (Linnenbrink & Pintrich, 2002). This mediation effect of achievement goals has been tested on different outcomes, such as intrinsic motivation and academic self-concept (Murayama & Elliot, 2009), learning strategies (Michou et al., 2013), coping strategies (Friedel et al., 2007), and disruptive behavior (Kaplan et al., 2002). Regarding affective outcomes, two studies have addressed this mediation hypothesis of student achievement goals in relation to individual perceptions of goal structure. Roeser et al. (1996) explored the mediation effect of student achievement goals and feelings of school belonging in the relationship between school perceptions (i.e. school goal structures and teacher-student relationship) and positive affect. While perceived mastery goal structure was significantly related to student positive school-related affect, it appears non-significant when introduced simultaneously with perceived teacher-student relationship in regression analysis. These two perceptions indeed shared a large part of variance ($r = .70^{**}$). In the absence of direct effect, the authors did not investigate the mediation effect of personal goals. Several years later, Gonida et al. (2009) explored the link between, on the one hand, individual perceptions of school goal structures and parent goal structure and, on the other, student emotional engagement. Using path analysis, they also tested the mediation effect of student achievement goals (i.e. mastery goal, performance-approach goal and performance-avoidance goal). As the results indicated that emotional engagement was not predicted by school or parent goal structures, the mediation effect of personal goals was not tested.

Even though the multivariate analysis in these two studies did not find any direct effect of individual perception of goal structures on student emotional outcomes, first-order correlations between these variables were significant in both studies. Moreover, others studies found relationships between goal structures and positive or negative affects (Gertsakis et al., 2020; Kaplan & Midgley, 1999; Méndez-Giménez et al., 2017; Roeser et al., 1998; Shim et al., 2013), affective engagement (Diseth & Samdal, 2015), discrete emotions (Baudoin & Galand, 2017; Galand & Philippot, 2005), or a global measure of affective experience (Kaplan & Maehr, 1999). All these findings thus suggest a direct effect of goal structure on emotional outcomes and invite further exploration of the hypothesis of an indirect effect through student achievement goals.

Beyond the lack of direct effect in the models tested, the two studies mentioned above face some limitations. First, outcomes taken into account are global measures of emotions (positive or negative affect), whereas, as outlined previously, some studies indicate different effects of achievement goals according to discrete emotion (Mouratidis et al., 2009). Second, these studies did not use multilevel analysis; they only tested the effect of individual perceptions of goal structures both on personal achievement goals and on emotions. Murayama and Elliot (2009) and Méndez-Giménez et al. (2018) used multilevel models to investigate the mediation effect of student achievement goals (in relation to motivational outcomes) and called for more studies of this type.

Present study

The aim of this study is to test the mediation effect of student achievement goals in the relationship between classroom goal structures and student emotional

outcomes. We expect to find a direct effect of classroom goal structure on student emotional outcomes, in line with previous results (Diseth & Samdal, 2015; Galand & Philippot, 2005; Kaplan & Maehr, 1999; Kaplan & Midgley, 1999; Méndez-Giménez et al., 2017; Roeser et al., 1998; Shim et al., 2013), and will then test the indirect effect of the student achievement goals.

Moreover, in accordance with the recommendations of Mouratidis et al. (2009) and Pekrun et al. (2006), this study investigated discrete emotions rather than a global measure of positive or negative affects. As part of a larger project about student emotional well-being in line with the work of Kaplan and Roeser (Kaplan & Maehr, 1999; Kaplan & Midgley, 1999; Roeser et al., 1998, 1996), this study focused on discrete emotions experienced at school in a general way and not specifically task- or course-related. More specifically, we investigated enjoyment, anger, boredom, and anxiety, which are the most commonly studied emotions in relation to teachers' practices (Frenzel et al., 2007; Lazarides & Buchholz, 2019; Sun et al., 2020).

Finally, this study uses multilevel modeling to take into account the hierarchical structure of the data (Raudenbush & Bryk, 2002). Goal structure perceptions of students from the same classroom were aggregated and considered to be a reliable indicator of this environment (De Jong & Westerhof, 2001; Lüdtke et al., 2009). These aggregated variables were analyzed at the contextual level, and goal orientations and school-related emotions at the individual level.

The research questions and hypotheses tested in the present study are as follows:

Research question 1: Do classroom goal structures have an effect on students' discrete emotions experienced at school (enjoyment, anger, boredom, and anxiety). Research on the effect of goal structures on discrete emotions (rather than positive or negative affects) is lacking but we can make more specific assumptions based on an extension of the approach of Pekrun et al. (2006):

H1a: Classroom mastery goal structure is expected to be positively associated with student positive activity-related emotion (enjoyment) and negatively linked to student negative activity-related emotions (anger and boredom).

H1b: Classroom performance goal structure is expected to be positively associated with student negative outcome-related emotion (anxiety).

Research question 2: Do classroom goal structures have an effect on student achievement goals? Regarding mixed results in the literature, all effects will be explored, besides the two more precise hypotheses based on goal theory (Midgley, 2002):

H2a: Classroom mastery goal structure is expected to be positively linked to student mastery goals.

H2b: Classroom performance goal structure is expected to be positively linked to both student performance-approach and performance-avoidance goals.

Research question 3: Are student achievement goals associated with emotions experienced at school (enjoyment, anger, boredom, and anxiety). More precise hypotheses can be formulated based on the approach of Pekrun et al. (2006):

H3a: Student mastery goal is expected to be positively related to positive activity-related emotion (enjoyment) and negatively related to negative activity-related emotions (anger and boredom).

H3b: Student performance-avoidance goal is expected to be positively related to negative outcome-related emotion (anxiety).

Research question 4: Do student achievement goals mediate relationships between classroom goal structures and emotions experienced at school (enjoyment, anger, boredom, and anxiety). Based on achievement goal theory (Kaplan & Maehr, 1999; Linnenbrink & Pintrich, 2002) and the approach of Pekrun et al. (2006), the following two hypotheses have been formulated:

H4a: Personal mastery goals are expected to mediate the relationship between classroom mastery goal structure and activity-related emotions (enjoyment, anger, and boredom).

H4b: Personal performance-avoidance goals are expected to mediate the relationship between classroom performance goal structure and outcome-related emotion (anxiety).

Methodology

Sample and procedure

The participants were 1,232 ninth-grade students from 72 classes in 22 French-speaking Belgian schools.[1] This sample included 49.1% girls and the mean age was

[1]The data that support the findings of this study are available from the corresponding author upon reasonable request.

14.9 years (SD = 1.04). The sample is diverse with respect to socio-cultural background and ethnic background. Both parents are Belgian citizen for 65.4%, one of the parents for 20% and both parents are non-native for 14.6% of the sample. With regard to family context, 80.3% are living with two adults and 19.7% are living in lone-parents families or in an institution. Both parents are employed for 62.8% of participants, only one parent is employed for 28.5% and both parents are unemployed for 8.7%. The schools were located in different urban and suburban areas in the French-speaking part of Belgium. The majority of students were in a comprehensive track (68.1%), and the others in a vocational track. In the French-speaking part of Belgium, the choice of a track is related to students' specific paths. Comprehensive track give access to higher education whereas vocational track prepares to enter the job market. Students in comprehensive and vocational education usually differ in their academic levels (Fédération Wallonie-Bruxelles, 2014). Another aspect of this education system is the high rate of grade retention. In our sample, 26.3% of students repeated a year once and 17.8 twice or more (consistent with the PISA 2012 report; Fédération Wallonie-Bruxelles, 2014). Hence, it is relevant to control for these characteristics in analyses. Data were collected in the course of a larger study about students' well-being and social behaviors. Participants completed in the spring an anonymous questionnaire administered by a researcher, during regular class time. They were informed that participation was voluntary and received assurances of confidentiality before actively consenting to take part in the study. The mean number of student respondents per class was 17 (min = 6 and max = 29).

Measures

Student achievement goals were assessed with items from a French adaptation (Galand & Philippot, 2002) of the Personal Achievement Goal Orientation scales of the PALS (Midgley et al., 2000). Student mastery goal was measured with three items (Cronbach alpha = .76) assessing to what extent students engage in learning activities to improve themselves and learn new things (e.g., "One important reason why I do my work in school is because I want to get better at it"). Student performance-approach goal was measured with three items (Cronbach alpha = .74) assessing to what extent students engage in learning activities to demonstrate their relative competence and outperform others. According to the categories proposed by Hulleman et al. (2010), two of the items are performance-normative (e.g., "It's important for me to do better than other students") and one is performance-evaluative ("One of my main goals at school is to show others that I'm one of the smartest in my class"). Student performance-avoidance goal was measured with three items (Cronbach alpha = .56) assessing to what extent students engage in learning activities to avoid appearing less able than others (e.g., "At school, I work because I don't want to do worse than other students in my class"). While similar coefficients of reliability were replicated for mastery and performance-approach scales, Cronbach's alpha regarding performance-avoidance was weaker than in previous studies (e.g., .70 in Galand & Philippot, 2002). All items were answered on a 5-point scale ranging from 0 (do not agree at all) to 4 (agree entirely).

Classroom goal structure items were drawn from a French adaptation (Galand & Philippot, 2005) of the goal structure scales of the PALS (Midgley, 2002). Mastery goal structure was measured with four items (Cronbach alpha = .70) assessing teachers' behaviors focused on improvement and understanding in the classroom (e.g., "Teachers pay attention to the progress of each student"). Performance goal structure was measured with four items (Cronbach alpha = .72) assessing teachers' behaviors emphasizing social comparison and elitism in the classroom (e.g., "When teachers ask questions, they mainly ask good students to answer"). Students' answers were aggregated at the classroom level.

Students' school-related emotions were assessed with items from a French adaptation (Galand & Philippot, 2005) of the Differential Emotion Scale (Izard et al., 1974). Students rated the frequency with which they had experienced several discrete emotions at school during the past week using a 5-point scale (from 0 "never" to 4 "all the time"). Enjoyment ($r = .65$, $p < .001$), anger ($r = .45$, $p < .001$), and anxiety ($r = .60$, $p < .001$) were each assessed with two items and boredom was assessed with one.

Regarding control variables, we controlled for gender, past performance (grade retention), socioeconomic status (SES), and track, which were found to be linked to some emotional outcomes (Baudoin & Galand, 2017; Hospel & Galand, 2016; Lazarides & Buchholz, 2019; Mouratidis et al., 2009). Gender (1 = girl, 2 = boy) was introduced at student level, track (0 = comprehensive, 1 = vocational) at classroom level, and grade retention (0 = no repetition, 1 = grade repetition once, 2 = grade repetition at least twice) and SES (0 = both parents are unemployed, 1 = one of the parents has a job, 2 = both parents have a job) at both levels.

Results

Descriptive statistics

Means, standard deviations and correlations for variables at the student level are presented in Table 1, and for variables at the classroom level in Table 2.

Analytical strategy

Multilevel analyses were performed using HLM7 software. To test the mediation effect of achievement goals, we successively investigated effects of independent variables (goal structures at level-2) on dependent variables (emotions), effects of independent variables (goal structures at level-2) on mediators (achievement goals), effects of mediators (achievement goals) on dependent variables (emotions), and lastly the role of mediators (achievement goals) in the relationship between independent variables (goal structures at level-2) and dependent variables (emotions) (Baron & Kenny, 1986).

Preliminary analyses

First, we tested whether the scores of goal structures varied significantly between classrooms. As expected, unconditional models, i.e. models without any explanatory variables, showed a significant amount of variance at the classroom level (Meece et al., 2006). Intraclass correlations (ICC) indicated that there was 12.4% and 11.5% of variance located at the classroom level for mastery and performance goal structures, respectively, supporting the idea that students within the same classroom partially shared a common perception of goal structures. We also checked whether outcome variables and hypothesized mediators varied between classrooms. Unconditional models showed that amount of variance located at the classroom level was 2.9%, 2.6%, and 4.5% for anger, anxiety, and enjoyment, respectively, and 4% and 4.7% for mastery and performance-approach goal, respectively. All these variables varied significantly between classrooms. Regarding boredom and performance-avoidance goal, variances at the classroom level were found to be non-significant. Consequently, classroom-level variables were only introduced in analyses for outcomes with a significant classroom effect, i.e. anger (Table 3), anxiety (Table 4), enjoyment (Table 5), mastery goal, and performance-approach goal (Table 6), and not for boredom and performance-avoidance goal.

Table 2. Means, standard deviations and correlations between variables at level-2.

	M	SD	1.	2.	3.	4.
1. Track	-	-				
2. SES mean	1.47	0.33	**−.42*****			
3. Proportion of retained students	0.74	0.57	**.75*****	**−.59*****		
4. Mastery goal structure	2.43	0.35	−.19 t	**.25***	**−.34****	
5. Performance goal structure	1.63	0.38	.13	**−.35****	**.23***	**−.75*****

N = 72. Track was coded 0 = comprehensive, 1 = vocational. *p < .05, **p < .01, ***p < .001

Analyses with predictors

First, the effects of classroom goal structures were investigated on discrete emotions with a significant classroom effect, i.e. enjoyment, anger, and anxiety, considering control variables. Given the high correlation at classroom-level between mastery goal structure and performance goal structure (Table 2), goal structures were introduced separately in two distinct models to avoid collinearity problems. In line with the recommendation of Raudenbush and Bryk (2002), only variables at classroom-level with significant effect were retained in the final models (Models 1a and 1b in Tables 3–5). When goal structures were introduced at the classroom level, the results showed that mastery goal structure was positively related to enjoyment, and negatively to anger and anxiety. Regarding performance goal structure, a negative link was found with enjoyment, and a positive link with anger and anxiety.

Table 1. Means, standard deviations and correlations between variables at level-1.

	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Gender	-	-									
2. SES	-	-	−.02								
3. Grade retention	-	-	**.13*****	**−.21*****							
4. Anger	1.06	1.02	**.07***	**−.06***	**.11*****						
5. Boredom	2.21	1.27	**.10****	−0.01	.01	**.31*****					
6. Anxiety	1.45	1.13	**−.13*****	0.01	−.04	**.45*****	**.16*****				
7. Enjoyment	2.51	1.06	**−.08****	**.10*****	**−.10****	**−.40*****	**−.26*****	**−.32*****			
8. Mastery goals	2.70	1.08	**−.11*****	**−.07***	.04	**−.23*****	**−.39*****	−.04	**.18*****		
9. Performance-approach goals	1.28	1.12	**.14*****	**−.09****	**.06***	.05	**−.08****	.04	.01	**.19*****	
10. Performance-avoidance goals	1.98	1.09	−.03	−.02	.05 t	.04	**−.09****	**.15*****	.02	**.24*****	**.47*****

N = 1232. Gender was coded 1 = female, 2 = male. *p < .05, **p < .01, ***p < .001.

Table 3. Results of multilevel analyses for anger at school.

	Model 1a	Model 1b	Model 2	Model 3
Intercept	−0.14	−0.15	−0.04	−0.03
Individual-level				
Gender	**0.11***	**0.12***	0.05	0.04
SES	−0.05	−0.06	−0.08	−0.07
Grade retention	**0.10***	**0.11****	**0.14****	**0.12****
Mastery goals			**−0.27*****	**−0.27*****
Performance-approach goals			0.04	0.04
Performance-avoidance goals			**0.09***	**0.09****
Classroom-level				
Track				
SES mean				
Prop. retained students				
Mastery goal structure	**−0.08***			−0.07 t
Performance goal structure		**0.07***		
Between-classroom variance explained	*26.7%*	*23.4%*	*11.3%*	*17.1%*
Total variance explained	*1.9%*	*1.8%*	*8.1%*	*8.4%*

$N_{students}$ = 1100; $N_{classrooms}$ = 72. Gender was coded 1 = female, 2 = male. t $p < .1$, *p < .05, **p < .01, ***p < .001

Table 4. Results of multilevel analyses for anxiety at school.

Anxiety	Model 1a	Model 1b	Model 2	Model 3
Intercept	**0.48*****	**0.47*****	**0.46*****	**0.47*****
Individual-level				
Gender	**−0.27*****	**−0.27*****	**−0.26*****	**−0.27*****
SES	−0.01	−0.01	−0.01	−0.01
Grade retention	−0.01	−0.01	−0.01	−0.01
Mastery goals			**−0.08***	**−0.08****
Performance-approach goals			−0.01	−0.02
Performance-avoidance goals			**0.19*****	**0.19*****
Classroom-level				
Track	**−0.18***	**−0.17***	−0.14 t	**−0.15***
SES mean				
Prop. retained students				
Mastery goal structure	**−0.06***			
Performance goal structure		**0.06***		**0.06***
Between-classroom variance explained	*24.9%*	*25%*	*24.1%*	*29.2%*
Total variance explained	*2.1%*	*2.1%*	*5%*	*5.2%*

$N_{students}$ = 1100; $N_{classrooms}$ = 72. Gender was coded 1 = female, 2 = male. Track was coded 0 = comprehensive, 1 = vocational. t $p < .1$, *p < .05, **p < .01, ***p < .001.

Table 5. Results of multilevel analyses for enjoyment at school.

Enjoyment	Model 1a	Model 1b	Model 2	Model 3
Intercept	0.05	0.07	−0.01	−0.02
Individual-level				
Gender	**−0.12***	**−0.12***	−0.08	−0.07
SES	**0.11***	0.10 t	**0.12***	**0.12**
Grade retention	−0.05	−0.05	**−0.08***	−0.06
Mastery goals			**0.18*****	**0.18*****
Performance-approach goals			−0.01	−0.01
Performance-avoidance goals			−0.04	−0.05
Classroom-level				
Track				
SES mean				
Prop. retained students				
Mastery goal structure	**0.09***			**0.08***
Performance goal structure		**−0.06***		
Between-classroom variance explained	*41%*	*31%*	*27.9%*	*40.6%*
Total variance explained	*2%*	*1.7%*	*4.4%*	*4.8%*

$N_{students}$ = 1100; $N_{classrooms}$ = 72. Gender was coded 1 = female, 2 = male. t $p < .1$, *p < .05, **p < .01, ***p < .001.

We then also tested the effects of goal structures at the classroom level on the mediators, that is, student achievement goals (Table 6). We only found that the classroom mastery goal structure was positively associated with student mastery goals.

The next step involved investigating student achievement goal effects on each discrete emotion (Model 2 in Tables 3–5). The findings indicated that student mastery goals were positively associated with enjoyment, and negatively associated with anger and anxiety. The results also showed a positive association between student performance-avoidance goals and anger or anxiety, whereas no relationship was found between performance-approach goals and any emotion. Regarding boredom, the results only showed a negative link with student mastery goals.

The last models investigated the mediation effect of student achievement goals in the relationship between classroom goal structures and discrete emotions. In accordance with the hypotheses (H4a and H4b), we investigated the mediation effect of student mastery goals in the relationship between mastery goal structure and enjoyment or anger, but also the mediation effect of student performance-approach goals in the relationship between performance goal structure and anxiety. Individual achievement goals and classroom goal structure were simultaneously introduced at level-1 and level-2, respectively, to predict outcomes. The coefficients in these models (Model 3 in Tables 3–5) were used to examine indirect effects by means of Sobel's test (Baron & Kenny, 1986). The indirect effect was significant for anger ($z = -2.11$, $p < .05$) and enjoyment ($z = 2.04$, $p < .05$) but not for anxiety.

Discussion

The aim of this study was to investigate the underlying process behind classroom goal structure effects on student school-related emotions. According to achievement goal theory (Kaplan & Maehr, 1999; Linnenbrink & Pintrich, 2002), classroom goal structures influence student endorsement of achievement goals, which, in turn, influence student emotions. So we first investigated the effects of classroom goal structure on student emotions, second the effects of classroom goal structures on student achievement goals, third the effects of student achievement goals on emotions, and finally the mediation effect of student achievement goals in the relationship between classroom goal structure and

Table 6. Effects of classroom goal structures on student achievement goals.

	Mastery goals		Performance-approach goals		Performance-avoidance goals
Intercept	**0.99*** **	**1.10*** **	0.36	0.29	0.15
Individual-level					
Gender	**−0.24*** **	**−0.26*** **	**0.26*** **	**0.25*** **	−0.07
SES	−0.02	−0.02	−0.09 t	−0.09 t	−0.04
Grade retention	−0.01	0.02	−0.02	−0.02	0.06 t
Classroom-level					
Track	0.18 t				/
SES mean	**−0.42** **	**−0.44** **	**−0.39***	−0.34 t	/
Prop. retained students					/
Mastery goal structure	**0.09 ***		0.01		/
Performance goal structure		−0.01		0.04	/
Between-classroom variance explained	*58.6%*	*29%*	*52%*	*54%*	/
Total variance explained	*3.8%*	*2.8%*	*3.5%*	*3.7%*	*0.2%*

$N_{students}$ = 1100; $N_{classrooms}$ = 72. Gender was coded 1 = female, 2 = male. Track was coded 0 = comprehensive, 1 = vocational. t $p < .1$, *p < .05, **p < .01, ***p < .001.

student emotions. In the next section, we discuss the findings of each step and then the limitations and main implications of our study. For the sake of clarity, classroom goal structures' effects are discussed in relation to other multilevel (or quasi-experimental) studies that also consider goal structure as a contextual construct.

Classroom goal structures and student school-related emotions

As expected, we found a direct effect of classroom goal structures on some emotions. More specifically, we found that by emphasizing learning and encouraging each student to progress (rather than to compare or compete), teachers can sustain student enjoyment, but also reduce student anger and anxiety. When teachers emphasize academic performance and make comparison between students, they foster feelings of anger and anxiety, and play a part in reducing enjoyment. These results are consistent with hypotheses H1a and H1b even though additional, unexpected results are also found. Until now, few studies have investigated effects of goal structures as a contextual construct on student emotional outcomes. Our previous findings showed relationships between classroom goal structures (at classroom level) and some discrete negative emotions but not with enjoyment (Baudoin & Galand, 2017). Conversely, in their quasi-experimental study, Gertsakis et al. (2020) found an effect of goal structures on positive affect but not on negative affect. The present study is the first to highlight a relationship between goal structure as a contextual construct and both positive and negative emotional outcomes. The lack of effect in the Gertsakis and colleagues' study (2020) could be explained by the use of a composite score of different negative emotions (Mouratidis et al., 2009). Regarding more specifically enjoyment, the present study indicates a link with teachers' practices, which is consistent with some previous studies (Lazarides & Buchholz, 2019; Sun et al., 2020) but not with others (Baudoin & Galand, 2017; Frenzel et al., 2007; Pekrun et al., 2014). It is reassuring for teachers to know they have the power to contribute to students' enjoyment. However, more studies are needed to confirm this and explain such differences in existing results. Regarding boredom, we surprisingly found that this emotion does not differ between classrooms, whereas previous studies showed a significant amount of variance at the classroom level (Baudoin & Galand, 2017; Frenzel et al., 2007; Lazarides & Buchholz, 2019; Sun et al., 2020). This can probably be explained by our measurement of this variable (a single item using a 5-point scale). More generally, the present research showed lower amounts of variance located at the classroom level than previous studies on discrete emotions (Baudoin & Galand, 2017; Frenzel et al., 2007; Lazarides & Buchholz, 2019; Sun et al., 2020).

Classroom goal structures and student achievement goals

The present multilevel study first replicates the well-established link between mastery goal structure and student mastery goals (H2a) (Bardach et al., 2018; Ciani et al., 2010; Dresel et al., 2013; Luo et al., 2011; Méndez-Giménez et al., 2018; Murayama & Elliot, 2009; Urdan, 2004b). With regard to the assumed relationship between performance goal structure and personal performance-approach goals, our results do not confirm this hypothesis (H2b). This is consistent with the results of Murayama and Elliot (2009) but not with other multilevel findings (Dresel et al., 2013; Luo et al., 2011; Méndez-Giménez et al., 2018; Urdan, 2004b). At the individual-level, Bardach et al. (2020) highlight that relation between students' perceptions of goal structures

and their achievement goals vary according the conceptualization of goal structures (teacher practices vs. climate) but also the educational level or the world region. Moreover, results could also vary according to the control variables introduced in the analyses. All these parameters may explain why these results differ. Currently, there is not enough multilevel studies to systematically compare their results based on these different criteria, which could provide a clearer view. Regarding the present study, it should also me noted that, while previous findings are inconsistent regarding negative associations between mastery goal structures and performance goals and between performance goal structures and mastery goals, we did not find any significant association of this kind.

Finally, the level of student performance-avoidance goals appears not to differ between classrooms and, de facto, not to be linked to classroom goal structures. Murayama and Elliot (2009) also reported no significant relationship between goal structures at classroom level and performance-avoidance goals, but they did not specify whether there was a classroom effect in their sample. Furthermore, Schwinger and Stiensmeier-Pelster (2011) found only a marginal classroom effect for performance-avoidance goals and some studies reported lower intra-class correlations compared to other types of goal (Sun et al., 2020; Wolters, 2004). All these results suggest that performance-avoidance goals are less related to contextual features of the classroom than other types of goals. This might be explained by the fact that performance-avoidance goals, in any context, are pursued by students with lower perceived competence (Elliot & Church, 1997; Law et al., 2012), but more studies are needed to verify this assumption. In relation to our study, it should be noted that the internal consistency of this measure was low and the absence of classroom effect could also be due to a large measurement error.

Student achievement goals and student school-related emotions

Our results are in line with previous findings regarding the association between personal achievement goals and emotions. As expected (H3a & H3b), student mastery goals were found to be positively linked to enjoyment and negatively linked to boredom and anger, while student performance-avoidance goals were linked to a higher level of anxiety. However, we also found a negative relationship between mastery goals and anxiety, and a positive relationship between performance-avoidance goals and anger, relationships that were not apparent in zero-order correlations (see Table 1). In the same way, the positive zero-order correlation between anxiety and student performance-approach goals was greatly reduced and did not remain significant in the multivariate analysis. Performance-approach and performance-avoidance goals are indeed closely linked (see Table 1). In line with the multiple goal perspective (Barron & Harackiewicz, 2001), students concurrently pursue different goals. Consequently, it could be relevant to investigate the effects of goal interactions. In the present sample, additional analyses did not show any interaction effect for anxiety or anger, only an interaction effect on enjoyment between mastery and performance-approach goals. Person-centered analysis would probably be relevant to explore this issue further (Wormington & Linnenbrink-Garcia, 2017). Based on previous findings (Jang & Liu, 2012), it may be expected that this type of analysis would show a profile with high performance-approach and high performance-avoidance goals (more anxious) and a profile with high performance-approach but moderate performance-avoidance goals (less anxious). The discrepant results between our zero-order and multivariate analyses may provide an partial explanation for inconsistent findings in the literature, specifically regarding performance-approach goal effects. Some authors argue that inconsistent findings arise rather from variations in the operationalization and measure of performance-approach goals (Hulleman et al., 2010; Senko & Dawson, 2017). Future research will probably need to take into account both of these issues in order to offer a clearer picture of the effects of achievement goals on student emotions.

Mediation effect of student achievement goals

Finally, given that classroom goal structures were related to some student school-related emotions, it was possible to investigate the mediation effect of student achievement goals. Findings showed that student mastery goals partially mediate the effect of classroom mastery goal structure on anger and enjoyment. In other words, student anger and enjoyment are linked to mastery goal structure and these effects are partly attributable to students' endorsement of mastery goals. The results logically did not show any significant indirect effect of performance goal structure on anxiety. Indeed, performance-approach goals do not seem to be linked either to performance goal structure or to anxiety. So this study is the first to show a mediation effect of student goals in the relationship between classroom goal structures and students' discrete emotions.

Beyond the issue of emotional outcomes, our results are in line with those of Murayama and Elliot (2009)

regarding mediation effect. Indeed, they found a mediation effect of student mastery goals in the relationship between mastery goal structure on the one hand and intrinsic motivation and academic self-concept on the other, but found no such effect of student performance-approach goals. In the same way, Lau and Nie (2008) showed a detrimental relationship between classroom performance goal structures and student achievement, engagement, effort withdrawal, and avoidance coping, while student performance-approach goals were not related to these outcomes (apart from a positive correlation with engagement). These results raise questions about the underlying processes explaining goal structure effects, and more specifically performance goal structure effects. If goal adoption does not explain these effects (or only partly), what other factors are at play? And are the processes involved the same from one outcome to another? Is it the same or a different factor that mediates goal structure effects on emotions, intrinsic motivation, self-efficacy, and cheating? In examining the effects on a self-determination motivation index, Méndez-Giménez et al. (2018) found mediation of performance-approach goals. However, this study differentiates itself by its use of the 3 × 2 framework at both individual and contextual levels, which may account for the divergent results. More multilevel studies are needed on this issue but, based on the current evidence, caution is required. Where researchers find a relationship, or lack thereof, between personal performance goals and student outcomes, this multilevel study, supported by others (Lau & Nie, 2008; Murayama & Elliot, 2009), indicates that it is unreasonable to draw conclusions about performance goal structure. By contrast, when links between mastery goals and student outcomes are found, it seems legitimate to promote mastery goal structure as a practical implication.

This discrepancy between the effects of student performance goals and the corresponding goal structure, although this needs to be confirmed by more multilevel studies, opens the reflection on the lack of clarity in achievement goal theory. In their paper, Elliot and Moller (2003) suggested that the disagreement regarding the positive or negative nature of performance-approach goals came from the coexistence of different evaluative criteria: empirical, theoretical, and meta-theoretical (in terms of values and beliefs). Taking into consideration both individual and contextual dimensions of the achievement goal model, this multilevel study, such as others (Lau & Nie, 2008; Murayama & Elliot, 2009), allows to reconcile empirical and meta-theoretical considerations. Indeed, these empirical results simultaneously showed that performance-approach goals are not inimical and that teachers should only foster student mastery goals, in line with values and beliefs on which the achievement goal theory is grounded.

Limitations and perspectives

The present study is subject to several limitations. The first and main limit is the cross-sectional nature of the data. Hence, conclusions may not be drawn about the direction of the effects. According to some authors, emotions may indeed influence goal adoption (Linnenbrink & Pintrich, 2002). Moreover, classroom goal structures themselves may be affected by students' outcomes. Further longitudinal or (quasi-) experimental researches are needed to investigate more extensively the causal relationships between these variables. Another limitation is the low internal consistency of the performance-avoidance goal scale. Despite this, however, the present findings are in line with previous results. This study simultaneously considered personal goals and classroom goal structures, but cross-level interactions were not examined. According to some researchers, goal structures may moderate individual goals effects (Lau & Nie, 2008; Murayama & Elliot, 2009). Other contextual variables should also be explored given that interclass variations are still significant after the introduction of goal structures. For example, variables such as teacher support or structure (from self-determination theory) have already shown effects on emotions (Ahmed et al., 2010; Mouratidis et al., 2013) and on achievement goals (Lazarides & Buchholz, 2019; Ramos et al., 2020). Besides the teachers' practices, classmates' achievement goals could also affect the endorsement of goals through the process of goal contagion (King & Mendoza, 2020) and this could contribute to partly explain the classroom effect. Finally, our hypotheses were tested on one single age group (9th graders) from a European country. Results of Bardach et al. (2020) suggest that the relations between goal structures and student achievement goals could vary depending on educational level and world region. Therefore, caution is required when generalizing these findings to students of all ages and from other countries and cultural values.

Implications

Goal achievement theory has been from the outset recognized as a relevant theoretical framework in order to promote student emotional well-being (Elliott & Dweck, 1988; Kaplan & Maehr, 1999; McLaughlin, 2008). However, over the years, the growing complexity of the achievement goals models and the contradictory results have contributed to a lack of clarity. Regarding the conceptualization of individual goals, some scholars

have recently proposed to go "back to the roots" (Korn et al., 2019). Others have encouraged researchers to examine both individual and contextual dimensions of the model using appropriate statistical modeling (Murayama & Elliot, 2009). In this line, the present study is the first to show the mediation effect of student mastery goals in the relationship between classroom mastery goal structure and student school-related emotions. This implies that teachers should be careful about their potential to promote students' mastery goals and thus their emotional well-being. Different instructional practices should be encouraged such as valuing student effort and progress, developing a positive view of error, or encouraging in-depth understanding. Providing students with time to work in their own pace also play a key role to promote students' mastery goals (Fokkens-Bruinsma et al., 2020).

With regard to student performance-approach goal, our results, consistent with previous findings (Huang, 2011), showed no relationship with positive or negative emotions. There is therefore no reason to worry about the emotional well-being of students with this type of goal, except if they simultaneously pursue performance-avoidance goals (see Jang & Liu, 2012). However, it is not because performance-approach goals have no impact on emotions that performance goal structure in the classroom is harmless. Our results indeed showed a detrimental association between classroom performance goal structure and student emotional outcomes. This should encourage teachers to avoid some practices such as comparing students with each other, publicizing results and favoring the best performing students. With regard to research, our results emphasize that it is hazardous to derive practical recommendations based only on individual goal results (Lau & Nie, 2008). With regard to future research, these findings encourage researchers to further explore the underlying process(es) in performance goal structure effects using multilevel models.

Lastly, if confirmed, the weak classroom effect on student performance-avoidance goals suggests that more individualized interventions are needed if the aim is to reduce the endorsement of this type of goal among students. This is raising further questions. How can practitioners identify students with performance-avoidance goals? And what type of intervention would be useful?

In conclusion, by testing both individual and contextual dimensions of the achievement goal model, this study provides clarity on the contributions of this theoretical framework to promoting student emotional well-being and opens up new perspectives. Given the direct effects of goal structures, our results emphasize the relevance of teacher practices to improve student emotional adjustment, regardless of the type of goal pursued by students. Specifically, these results encourage teachers to adopt practices focusing on mastery and improvement rather than on comparison and competition. Future research should further explore the adoption of performance-avoidance goals and the underlying process(es) behind performance goal structure effects. This appears to be an important issue to allow the achievement goal theory to be a relevant theoretical framework to guide practitioners in the field.

Disclosure statement

No potential conflict of interest was reported by the authors.

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