Using the 2 × 2 framework of achievement goals to predict achievement emotions and academic performance

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ABSTRACT

Previous work has established how achievement emotions are related to the trichotomous model of achievement goals, and how they predict academic performance. In our study we examine relations using an additional, mastery-avoidance goal, and whether outcome-focused emotions are predicted by mastery as well as performance goals. Results showed that outcome-focused emotions were predicted by mastery approach/avoidance, and performance-avoidance goals, whereas activity-focused emotions were predicted by mastery approach/avoidance goals only. Two achievement emotions, pride and hope, mediated relations between achievement goals and academic performance. These findings show that it is important to consider the hierarchical nature of achievement goals, that is, the distinction between goals and reasons. If students use grades as a basis on which to judge their task and intrapersonal competence, then mastery goals can predict outcome-focused emotions.

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1. Introduction

Previous research has examined the relations between achievement goals, the competence-based aims held by students, achievement emotions, the pleasant and unpleasant affective experiences of students in relation to their study, and academic performance. Achievement emotions are predicted by achievement goals (Pekrun, Elliot, & Maier, 2006) and mediate the relations between achievement goals and academic performance (Pekrun, Elliot, & Maier, 2009). Our study offers a replication and extension of this work by including an additional goal not included in the earlier work (a mastery-avoidance goal) and also by proposing that mastery approach and avoidance goals would relate to both activity- and outcome-related emotions.

1.1. Achievement emotions

Achievement emotions refer to the emotional experiences of students in relation to competence-related activities or outcomes (Pekrun, Goetz, Frenzel, Barchfeld, & Perry, 2011, Pekrun et al., 2006). A framework for classifying achievement emotions commonly reported by school and university students based on valence and focus was reported by Pekrun, Goetz, Titz, and Perry (2002). Valence refers to whether the achievement emotion is a pleasant or unpleasant experience and focus to whether the achievement emotion is experienced in relation to an achievement activity or outcome. According to the control–value theory (Pekrun, 2000, 2006; Pekrun, Frenzel, Goetz, & Perry, 2007; Pekrun et al., 2002), discrete emotions arise from the appraisal of learning and achievement based activities/outcomes on dimensions of control, the extent to which the student believes they can control the likelihood of successful learning activities/outcomes, and value, the intrinsic and extrinsic subjective values attached to a particular learning activity/outcome.

1.2. Achievement goals

Achievement goals are theorised as competence-focused aims, which can be distinguished in a framework of definition and valence (Elliot, 2005; Elliot & McGregor, 2001; Elliot & Murayama, 2008). Goals are defined as performance or mastery with a positive (i.e., attaining success) or negative (i.e., avoiding failure) valence. In summary, this 2 × 2 framework distinguishes between four goals: performance-approach, where the goal is to perform better than one's peers, performance-avoidance where the goal is to avoid performing worse than one's peers, mastery-approach, where the goal is to improve personal or task competence, and mastery-avoidance, where the goal is to avoid personal incompetence or task failure.

1.3. Linking achievement emotions and achievement goals

Pekrun et al. (2006) proposed how achievement emotions could be mapped onto the earlier trichotomous model of achievement goals: performance-approach, performance-avoidance and mastery goals. Items included on the mastery goal in the trichotomous framework

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correspond to a mastery-approach goal in the 2×2 framework. A mastery goal focuses attention on developing competence from task- or self-referenced standards and results in activity-focused emotions. Performance approach and avoidance goals focus attention on demonstrating competence from norm-referenced standards and result in outcome-focused emotions. The positive value appraisals arising from a performance-approach goal would result in outcome-focused emotion with a positive valence (e.g., hope) and the negative subjective value appraisals arising from a performance-avoidance goal would result in outcome-focused emotions with negative valence (e.g., anxiety). Evidence has supported these predictions with one anomaly, mastery goals did not only predict activity-focused emotions, but also predicted outcome-focused emotions (Huang, 2011; Pekrun et al., 2006, 2009).

Our study offers an extension of the previous work in two ways. First, we have included a mastery-avoidance goal in the model of achievement goals and emotions using the more recent 2×2 framework of achievement goals. Second, we expand Pekrun et al.'s (2006) model to account for the anomalous finding that mastery goals predict both activity and outcome-focused emotions. Performance goals require concrete academic outcomes, such as grades, on which normative comparisons can be made. Although, mastery goals are concerned with the development rather than demonstration of competence, this need not rule out grades as the basis on which mastery judgements are formed. A student, for instance, may judge their competence in a particular domain by judging their current grades against their previous grades. Furthermore, grades may be used to judge whether intrapersonal standards has been met, such as reaching a personally aspired target grade. Thus, we hypothesise that mastery approach and avoidance goals will be related to both activity and outcome-focused emotions and matched by valence. A summary of the hypothesised relations between achievement goals and emotions is shown in Table 1.

1.4. Academic performance, achievement goals and emotions

Three recent reviews present an extensive overview of findings of the relationship between achievement goals and academic achievement (Huang, 2012; Hulleman, Schrager, Bodman, & Harackewicz, 2010; Senko, Hulleman, & Harackiewicz, 2010). Performance and mastery achievement goals, with an approach valence, correlate positively with task and achievement outcomes, especially when performance-approach goal measurement items emphasise normative rather than appearance or evaluative concerns. Performance and mastery achievement goals, with an avoidance valence, correlate negatively with task and achievement outcomes. Achievement emotions also predict academic performance. Emotions with a positive valance, such as hope, positively correlate with academic performance whereas emotions with a negative valence, such as anxiety, negatively correlate with academic performance (Daniels et al., 2009; Goetz, Frenkel, Hall, & Lüdtke, 2007; Goetz, Frenkel, Lüdtke, & Hall, 2010; Pekrun et al., 2004; Pekrun et al., 2009, 2011).

Achievement emotions influence motivation, effort and learning strategies during task preparation and engagement (Pekrun et al., 2004, 2011). Their influence on academic achievement is more immediate than that of achievement goals which as a cognitively focused outcome is likely to influence achievement via an intervening process, such as emotions (Pekrun et al., 2009). The mediating role of achievement emotions was supported by Pekrun et al. (2009) using the trichotomous achievement goals framework. Relations with examination performance were mediated by (i) pride and hope for a performance-approach goal and (ii) anxiety, hopelessness and shame for a performance-avoidance goal. Relations between academic performance and mastery were mediated by boredom, but not enjoyment, and also outcome-focused emotions: hope, pride, hopelessness and shame. These findings confirm our conceptualisation of a mastery goal as a predictor of outcome as well as activity-focused outcome emotions. Our study extends this work by incorporating a fourth goal, a mastery-avoidance goal and using our expanded model of achievement goals and emotions to hypothesise that the relations between mastery approach and avoidance goals with academic achievement will be mediated by both activity and outcome-focused emotions, matched by valence.

1.5. Aims and hypotheses of the present study

The aim of this study was to examine the relations between achievement emotions and achievement goals using the 2×2 framework which includes mastery-avoidance goals. We offer the following hypotheses:

H1. Academic performance will show positive relations with achievement emotions and goals (mastery and performance) with a positive/approach valence and inverse relations with achievement emotions and goals (mastery and performance) with a negative/avoidant valence.

H2. Outcome-focused emotions will be predicted by performance approach/avoidance and mastery approach/avoidance goals whereas activity-focused emotions will be predicted by mastery approach/avoidance goals only. Achievement goals and emotions will be matched by valence.

H3. Outcome-focused emotions will mediate relations between performance approach/avoidance and mastery approach/avoidance goals whereas activity-focused emotions will mediate relations between mastery approach/avoidance goals only. Achievement goals and emotions will be matched by valence.

2. Method

2.1. Participants and procedure

200 undergraduate students (138 females and 62 males) following first year courses in introductory Psychology volunteered to participate (age: $M = 20.44, SD = 5.46$). Self-report questionnaires were completed at the end of normally scheduled class time. Achievement goals were measured early in semester 1, achievement emotions early in semester 2 and academic performance taken from aggregated semester 2 marks.

2.2. Measures

Achievement goals were measured using the twelve-item *Achievement Goals Questionnaire* (AGQ: Elliot & McGregor, 2001) in which items were made specific to Psychology. This self-report measure corresponds to the 2×2 framework and provides scores on four goals: mastery-approach, mastery-avoidance, performance-approach and performance-avoidance. Students responded to statements on a five-point scale ('strongly disagree' to 'strongly agree') so that a higher score on each scale represents a stronger endorsement of that goal. The validity and reliability of this measure were originally established in Elliot and McGregor (2001) and replicated in subsequent work (e.g., Huang, 2012). In the present study reliability coefficients (see Table 2) were acceptable ($\alpha \geqslant .69$).

Table 1
The activity and outcome emotions with a positive and negative valence that arise from mastery and performance goals along approach and avoidance dimensions.

Achievement emotions	Achievement goal
Positive outcome-focused:	Performance-approach
pride and hope	Mastery-avoidance
Negative outcome-focused:	Performance-avoidance
anxiety, shame & hopelessness	Mastery-avoidance
Positive activity-focused:	Mastery-approach
enjoyment	
Negative activity-focused:	Mastery-avoidance
boredom & anger	