Reciprocal relations between students’ academic enjoyment, boredom, and achievement over time

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ABSTRACT

The control-value theory (CVT) proposes that achievement emotions and academic achievement show reciprocal effects over time. Previous studies have examined how achievement emotions predict subsequent achievement. However, evidence is limited for whether achievement can also predict achievement emotions. To examine these reciprocal relations, data were collected about two achievement emotions: enjoyment and boredom, and mathematics achievement over four waves in a single school year in primary school students in Years 5 and 6. Results from structural equation modeling supported reciprocal relations between emotions and achievement. Higher enjoyment and lower boredom predicted greater subsequent achievement and, in turn, greater academic achievement predicted subsequent greater enjoyment and lower boredom. Furthermore, the relations between emotions over time were mediated by achievement. These findings build on the evidence base for CVT and further understanding of relations between achievement emotions and academic achievement in younger students.

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1. Introduction

The aim of this study was to further understand the relationship between academic emotions and academic achievement in children. A number of studies have shown that emotions are not merely a by-product of learning and achievement but, critically, impact on subsequent achievement in tandem with self-system variables such as motivation, learning strategies, and competence beliefs (e.g., Kytäla & Björn, 2010; Pekrun, Goetz, Daniels, Stupinsky, & Perry, 2010). Hence, understanding the development of children’s affect, and how it operates in the school context, offers useful possibilities to impact and positively influence children’s learning and achievement.

In particular, we examined relations proposed in control-value theory (CVT) that link emotions and achievement. CVT presents an integrated typology of emotions typically experienced in competence and achievement-based settings, with a cognitive-motivational explanation of the antecedents and outcomes of those emotions (Pekrun & Perry, 2014; Pekrun, 2006; Pekrun, Frenzel, Goetz, & Perry, 2007; Pekrun, Goetz, Titz, & Perry, 2002). In CVT, achievement emotions are positioned as an antecedent of academic achievement. However, relations between achievement emotions and academic achievement are not unidirectional. Academic achievements are also thought to influence subsequent emotions. Hence relations are expected to be reciprocal; academic emotions predict subsequent academic achievement and vice versa.

There is substantial empirical evidence that discrete achievement emotions, especially anxiety, can predict subsequent academic achievement (e.g., Mega, Ronconi, & De Beni, 2014; Pekrun et al., 2004; Ranellucci, Hall, & Goetz, 2015). Evidence for academic achievement influencing subsequent emotions, or academic achievement and emotions operating reciprocally over time is much more limited (Pekrun, Hall, Goetz, & Perry, 2014; Pinxten, Marsh, De Fraine, Noortgate, & Dame, 2014). Furthermore, studies examining the relations between achievement emotions and academic achievement have tended to use populations of undergraduate and secondary school students. There is limited evidence for how these relations might operate in younger students. In this study we address these limitations by examining the reciprocal relations between emotion and achievement proposed in CVT, in a sample of primary school children. Specifically, we examine how
academic achievement relates to two subsequent academic emotions (enjoyment and boredom), and, in turn, how these emotions relate to subsequent academic achievement.

1.1. Achievement emotions

Achievement emotions refer to those emotions experienced by students in learning, classroom and testing contexts (Pekrun et al., 2002). These emotions can be distinguished from other affective states and experiences that are experienced during achievement-related settings, such as mood, which are typically less intense, longer lasting, and do not have a specific object focus (Linnenbrink & Pintrich, 2002; Linnenbrink, 2006; Linnenbrink-Garcia & Barger, 2014; Pekrun, 2006). Control-value theory (CVT) differentiates between discrete achievement emotions along dimensions of valence (pleasant vs. non-pleasant), activation (activating vs. deactivating), and object focus (activity vs. outcome) (Pekrun & Perry, 2014; Pekrun, 2006; Pekrun et al., 2007, 2002).

In this study, we concentrated solely on two emotions: Enjoyment and boredom. These are two of the most intensely and frequently experienced achievement emotions (e.g., Frenzel, Thrash, Pekrun, & Goetz, 2007; Goetz, Frenkel, Pekrun, Hall, & Lüdtke, 2007) and thus likely to impact on achievement outcomes more strongly than emotions that are experienced infrequently. Enjoyment is defined as a pleasant activating emotion whereas boredom is defined as an unpleasant deactivating emotion.

1.2. Control-value theory of achievement emotions and academic achievement

CVT was used in this study as the framework for theorizing the reciprocal relations between activity-focused emotions (enjoyment and boredom) and academic achievement. According to CVT, achievement emotions influence achievement through motivational and cognitive processes (Pekrun & Perry, 2014; Pekrun, 2006; Pekrun et al., 2007, 2002), which in turn should determine qualitative differences in achievement and performance. Positive activating emotions, such as enjoyment, reinforce task activity, focus attention on the task, and facilitate flexible, deep learning strategies. In contrast, negative deactivating emotions, such as boredom, are characterized by a desire to avoid the situation, undermine task incentives and systematic use of learning strategies, and disrupt attentional focus, thus resulting in superficial learning (Kubandner & Pekrun, 2010). Accordingly, enjoyment is associated with higher achievement whereas boredom is associated with lower achievement, in both secondary school and undergraduate students (e.g., Ahmed, can der Werf, Kuyper, & Minnaert, 2013; Daniels et al., 2009; Frenzel, Pekrun, & Goetz, 2007; Goetz et al., 2007; Goetz, Frenzel, Lüdtke, & Hall, 2010; Niculescu, Tempelar, Dailey-Hebert, Segers, & Gijselaers, 2015; Pekrun et al., 2010; Pekrun et al., 2002, 2014, 2011; Putwain, Sander, & Larkin, 2013).

As we noted earlier, there is a lack of studies of younger students in primary school linking academic achievement with learning-related affect in general, and enjoyment and boredom in particular. Furthermore, with some recent exceptions (e.g., Pekrun et al., 2014, 2010; Pinxten et al., 2014) studies linking enjoyment and boredom with subsequent academic achievement do not typically control for the autoregressive relations with prior achievement. Demonstrating that achievement emotions, such as enjoyment and boredom, can predict achievement over and above the variance accounted for by prior achievement has substantial theoretical and applied importance; emotions are not a mere epiphenomenon of academic achievement and offer credible foci of influence and intervention.

Having established that academic emotions, such as enjoyment and boredom, are related to subsequent academic achievement, what is the rationale for expecting academic achievement to relate to subsequent emotions? To answer this question it is necessary to consider the role of control and value appraisals as proximal antecedents of academic emotions. Enjoyment results from an achievement-based activity (learning or testing) being valued and judged as controllable. Boredom results from an achievement-based activity not being valued and where task demands (learning or testing) are too low or too high. Studies have confirmed that boredom is negatively associated with, and enjoyment positively associated with, academic control and competence beliefs, and intrinsic and extrinsic values, in both undergraduate and secondary school students (e.g., Ahmed et al., 2010; Goetz, Frenzel, Hall, & Pekrun, 2008; Pekrun et al., 2010; Ruthig et al., 2008; for a summary, see Pekrun & Perry, 2014).

The formative and summative assessment of one’s learning is likely to directly impact on student’s control and value appraisals and, therefore, subsequent emotions. There is substantial evidence that academic achievement positively relates to expectation of success (Zhang, Haddad, Torres, & Chen, 2011) and competence beliefs (such as academic self-concept and academic self-efficacy) while controlling for the autoregressive relations with prior competence beliefs (e.g., Caprara, Vecchione, Alessandri, Gerbino, & Barbaranelli, 2011; Marsh & Martin, 2011; Marsh, Byrne, & Yeung, 1999). Furthermore, students may de-value the importance of a particular subject following failure (Loose, Régner, Morin, & Dumas, 2012; Régner & Loose, 2006). All things being equal, one would expect success to result in greater subsequent enjoyment by strengthening control and value appraisals, whereas failure would result in greater boredom by undermining control and value appraisals.

Few studies have examined the relations of academic achievement with subsequent academic emotions, or the reciprocal relations between academic achievement and academic emotions. Pekrun et al. (2014) showed reciprocal relations between boredom and achievement in undergraduate students, over five measurement occasions each for boredom and testing, controlling for gender, age, and high-school grades. Pinxten et al. (2014), in one of the few studies to sample younger children (aged 9–14 years), showed reciprocal relations between enjoyment and achievement in mathematics on four out of five testing occasions. Thus, the available evidence to date supports the reciprocal relations between emotion and achievement proposed in CVT. We build on this literature in the present study, by examining the reciprocal relations between achievement, enjoyment, and boredom, in a single study using a sequential panel design with primary school students (see Little, Preacher, Card, & Selig, 2007; Rosel & Plewis, 2008).

1.3. The model examined in the present study

In the present study, data were collected over four measurement occasions in a single school year. Mathematics achievement data were collected in the first wave (T1) shortly after the beginning of the school year (September), self-report data for enjoyment and boredom in November at the second wave (T2), Mathematics achievement data in April at the third wave (T3) and self-report data for enjoyment and boredom in June at the fourth and final wave (T4). Fig. 1 shows the relations between enjoyment and boredom, and academic achievement tested in this model.

Relations of emotions with subsequent achievement were
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