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The role of daily autonomous and controlled educational goals in students' academic emotion states: An experience sampling method approach

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ABSTRACT

The present study examines antecedents of university students' academic emotions (Pekrun, Goetz, Titz, & Perry, 2002) in the context of self-determination theory (SDT; Deci & Ryan, 1985; 2000), using real-time assessment and intra-individual analyses. We investigated whether daily autonomous and controlled-motivated educational goals predicted students' academic emotions. University students (N = 55) completed smartphone diaries over 14 consecutive days. The two-week intensive longitudinal data were organized in a hierarchical three-level structure, with situations (Level 1) nested within days (Level 2) nested within students (Level 3). Students' goal motivation was assessed in morning questionnaires, and academic emotions in three daytime questionnaires. The results of the multilevel structural equation models showed that setting self-determined autonomous educational goals predicted positive emotions, whereas controlled motivation predicted negative emotions in everyday academic situations, applying both to within-person processes and between-person differences. Both kinds of goal motivation, autonomous and controlled, were associated with determination in students' daily lives.

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1. Introduction

Previous research suggests that emotional experiences in educational settings strongly influence students' learning, achievement, and long-term academic development, and form part of their well-being (e.g., Linnenbrink, 2006; Pekrun & Linnenbrink-Garcia, 2014; Schutz, Hong, Cross, & Osborn, 2006). Little is known, however, about the relation of short-term educational goal pursuit to academic emotions. According to self-determination theory (SDT; Deci & Ryan, 1985; 2000), the reasons for why people pursue their goals have an impact on their experiences, even beyond the content of their goals (Deci & Ryan, 2000; Sheldon & Elliot, 1999).

The theory suggests that pursuing goals for intrinsic reasons might be more likely to evoke positive emotions than carrying out tasks motivated by external pressure. Furthermore, the emotions students experience in educational settings are influenced by personal characteristics and situational influences (Goetz, Bieg, Lüdtke, Pekrun, & Hall, 2013; Moeller, Dietrich, Eccles, & Schneider, 2017; Moeller, Salmela-Aro, Lavonen, & Schneider, 2015).

The present study uses an experience sampling method (ESM) to examine the extent to which university students' academic emotions vary from one learning situation to another, from one day to another, and from one individual to another. Two-week intensive longitudinal data were collected using smartphones, four times per day, including weekends. The main purpose of this study was to investigate whether self-determined, short-term educational goal pursuit was related to situational academic emotions. More specifically, we examined whether setting either autonomous or controlled-motivated educational goals in the morning would

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predict students' emotional states during the day. Following an intra-individual approach, we investigated whether this association would replicate both at the between-day level and the between-student level (i.e., inter-individual association).

1.1. Academic emotions

Emotions that are linked to learning, instruction, and achievement within educational settings are called academic emotions (Pekrun, Goetz, Titz, & Perry, 2002). Two types of academic emotions with different object focuses can be distinguished: *outcome emotions* pertaining to the outcomes of activities (e.g., hope for success or shame from failure), and *activity emotions* pertaining to an ongoing academic task (e.g., enjoyment during learning). These emotions can be further characterized based on their *positive* or *negative* valence (i.e., whether the emotional state is pleasant or unpleasant) and *activating* or *deactivating* nature (i.e., whether the emotional state includes high arousal or is passive; Pekrun, 2006; Pekrun, 2016). In contrast to deactivating emotions, which are assumed to be detrimental to academic motivation and cognitive performance (such as relaxation and boredom), positive (pleasant) activating emotions in particular have been shown to enhance students' performance. For instance, the enjoyment of learning has been found to be related to increased interest, effort, self-regulation and elaboration of the learning material, thus likely facilitating overall performance (Pekrun & Linnenbrink-Garcia, 2014). The underlying patterns of negative (unpleasant) activating emotions may be more complex. For instance, anxiety has been shown to produce task-irrelevant thinking in some situations, thus reducing the cognitive resources available for task purposes. However, it may also induce the motivation to study harder and thus facilitate overall learning in those who are more resilient to the devastating aspects of anxiety (Pekrun, 2016; Pekrun et al., 2002; for the difference between motivating and inhibiting anxiety, see; Jones, Meijen, McCarthy, & Sheffield, 2009; Moeller et al., 2015).

In the academic context, emotions are often studied with large samples at one point in time, with a focus on individual differences (e.g., Lonka & Ketonen, 2012). However, these trait-like conceptualizations and assessments have been criticized because they may reflect overall cognitive schemas and beliefs about academic emotions rather than actual experiences, and may be confounded with recall bias and distortion (see Goetz et al., 2013). In addition, they do not capture the effect of situational determinants and emotional fluctuations over time. Consequently, an increasing number of studies measure academic emotions with real-time assessments (e.g., Ahmed, Werf, Minnaert, & Kuyper, 2010; Bieg, Goetz, & Hubbard, 2013; Goetz, Frenzel, Stoeger, & Hall, 2010; Goetz, Sticca, Pekrun, Murayama, & Elliot, 2016; Moeller et al., 2015; Nett, Goetz, & Hall, 2011; Tanaka & Murayama, 2014).

Previous studies using situational (intra-individual) approaches to examine academic emotions indicate that the majority of the variance in emotions occurs between different learning situations rather than being driven by personal dispositions (Goetz et al., 2016; Nett et al., 2011; Tanaka & Murayama, 2014). However, in the aforementioned studies, the amount of variance due to changes in academic emotions *between days* was not reported or compared to the situational variance *within days*, although some studies suggest that students may have distinctly different moods or emotional states depending on the day (see Harvey et al., 2015; Litmanen, Lonka, Inkinen, Lipponen, & Hakkarainen, 2012; Tolvanen et al., 2011). Research examining within-person variations across the days of week in general life emotions has reported meaningful variance in emotions between days (see Hawley, Preacher, & Cacioppo, 2007; Nezlek, Vansteelandt, Van Mechelen, & Kuppens, 2008) and has provided evidence of positive

weekend effects and negative back-to-work/school effects, for instance (e.g., Ryan, Bernstein, & Brown, 2010).

Emotions can be measured as fluctuating states or as stable trait dispositions (Pekrun, 2006). The concept of dispositional affect suggests that people are predisposed to experience certain types or groups of emotions (e.g., Watson, Clark, & Tellegen, 1988). For instance, some people experience positive emotions more often than others (e.g., Lucas & Fujita, 2000; Watson & Clark, 1992). Situational emotions are related to stable affective dispositions in different ways. For example, situational emotions may repeat across situations and form a stable pattern: individuals who *often* feel pleasant emotions also tend to be satisfied with their lives as a whole (Lucas, Diener, & Suh, 1996; Watson et al., 1988). On the other hand, rather stable affective patterns such as moods or depressive episodes may influence the likelihood and consequences of situational emotions (Hirt, McDonald, Melton, & Harackiewicz, 1996; Lane, Whyte, Terry, & Nevill, 2005).

Besides the differences in situational, daily, and individual fluctuation, emotions may also co-occur or 'blend' differently depending on the time frame (Schmucke, Eglhoff, & Burns, 2002; Vansteelandt, Van Mechelen, & Nezlek, 2005). For example, individuals who are prone to feeling nervous are also prone to feeling angry (e.g., Watson et al., 1988). In contrast, when a person is angry at a particular moment, he or she does not necessarily feel guilty or anxious. In previous studies, measures of momentary affect, for instance, showed lower correlations between emotions of the same valence than measures of affect that captured longer time periods (e.g., state versus trait correlations, see Goetz et al., 2016; Vansteelandt et al., 2005). Although research assessing academic emotions with intra-individual approach and real-time assessments is increasing, the empirical evidence on intra-individual antecedents of students' emotions is restricted to only a few studies (see Ahmed et al., 2010; Bieg et al., 2013; Goetz et al., 2010, 2016; Tanaka & Murayama, 2014). Furthermore, little is known about the short-term effects of education-related personal goals on situational academic emotions.

1.2. Autonomous and controlled motivation in educational goal pursuit

Personal goals are subjectively meaningful aspirations that individuals actively pursue in their daily lives (Little, 1983; Salmela-Aro, 2009). A personal goal framework has also been applied in the academic context, suggesting that education-related personal goals and cognitive appraisals of these goals are related to students' academic achievement, attainment, and well-being (e.g., Dietrich & Salmela-Aro, 2013; Salmela-Aro & Nurmi, 1997; Salmela-Aro, Mutanen, Koivisto, & Vuori, 2010; Vasalampi, Salmela-Aro, & Nurmi, 2010). Typical appraisals include value, expectancy, or temporal range (Austin & Vancouver, 1996). In the present study, we focus on the value dimension, because value is assumed to be one major antecedent of academic emotions (Pekrun, 2006).

SDT (Deci & Ryan, 2000; Sheldon & Elliot, 1999) describes two types of value-related appraisals: autonomous and controlled goal motivation. Autonomously motivated goals or activities are self-initiated and freely chosen, and thus well aligned with the individual's personality and inner needs (Sheldon & Elliot, 1999). Controlled motivation, in contrast, means that a goal is pursued for external rewards or to avoid guilt, shame, or anxiety (Deci & Ryan, 2000). Previous studies on university students have revealed that in a variety of life domains, pursuing autonomous goals is associated with greater well-being and related negatively to various indicators of ill-being, such as depressive symptoms, negative affect, and physical symptoms (e.g., Schmuck, Kasser, & Ryan, 2000; Sheldon, Ryan, Deci, & Kasser, 2004). In educational contexts, autonomous

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