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Enjoyment of learning and its personal antecedents: Testing the change–change assumption of the control-value theory of achievement emotions

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ABSTRACT

The contribution focuses on the personal antecedents of the enjoyment of learning in mathematics. Using latent-change models, it tests the assumption of the control-value theory of achievement emotions (Pekrun, 2000, 2006) that positive changes in perceived control and perceived value lead to positive changes in the enjoyment of learning. Data are analysed of 431 students (three measurement time points in the sixth school year). The results confirm the change–change assumption: positive changes in perceived control and perceived value longitudinally predict positive changes in the enjoyment of learning. Thus, an important prerequisite for a further assumption of the theory is fulfilled, namely that a positive pedagogical–educational exertion of influence on the perceived control and perceived value represents a way in which to increase students' enjoyment of learning.

1. Introduction

Pekrun and Stephens (2011) are of the view that "emotions are ubiquitous in academic settings" (p. 3), and according to Schutz and Lanehart (2002), emotions are "involved in virtually every aspect of the teaching and learning process" (p. 67). However, it has repeatedly been noted that, with a few exceptions (test anxiety and emotions as a consequence of causal attributions), emotions have not been given the attention they deserve, in particular by educational–psychological research (Boekaerts, 2001; Linnenbrink-Garcia & Pekrun, 2011; Meyer & Turner, 2007; Pekrun, Frenzel, Goetz, & Perry, 2007; Pekrun, Goetz, Titz & Perry, 2002a; Pekrun & Schutz, 2007; Pekrun & Stephens, 2011). Although research into the role of emotions in the school context is still, as Linnenbrink-Garcia and Pekrun (2011) write, "in its early infancy" (p. 3), there is some empirical evidence for the assumption that emotions influence learning processes and achievements (for overviews, see, for instance, Frenzel, Goetz, & Pekrun, 2009; Pekrun, 2011; Pekrun et al., 2002a; Pekrun & Stephens, 2011).

Moreover, from qualitative studies, it has become clear that negative and positive emotions are experienced with approximately equal frequency in everyday school life, but that the latter, as already noted, have until recently been barely considered by research (Pekrun et al., 2002a; Pekrun, Goetz, Titz, & Perry, 2002b; Pekrun & Hofmann, 1999; Pekrun & Stephens, 2011). However, according to Linnenbrink-Garcia and Pekrun (2011), in the future, positive emotions should be given greater attention. Indeed, as Fredrickson (2001) makes clear, "positive emotions are worth cultivating, not just as end states in themselves but also as means to achieving psychological growth and improved well-being over time" (p. 218).

The positive emotion mentioned most frequently in the qualitative studies was enjoyment. The current contribution takes this as its focus, and looks more precisely at the enjoyment of learning in mathematics (described in the following as *enjoyment of learning* or in short as *enjoyment*). Enjoyment of learning is an activity-related, activating, positive emotion (Pekrun, Frenzel et al., 2007; Pekrun & Stephens, 2011), from which favourable effects are expected in terms of learning and achievements (Pekrun et al., 2002b).

Against the background of the control-value theory of achievement emotions (CVTAE; Pekrun, 2000, 2006; Pekrun & Stephens, 2010, 2011), of interest in the current contribution are the relationships between the enjoyment of learning on the one hand and its personal antecedents on the other. In this respect, the focus is on the change–change assumption of the CVTAE that positive changes in the antecedents bring with them positive changes in the enjoyment of learning. This concern with the antecedents of positive emotions is central in that, as Goetz, Frenzel, Stoeger, and Hall (2010) describe, "it is by examining why

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one experiences specific positive emotions that ideas can be generated as to how to best foster positive affective experiences" (p.49; cf. also Pekrun & Stephens, 2011, p. 12).

In the following, firstly, the assumptions of the CVTAE regarding the personal antecedents of emotions in general will be elucidated. Next, the assumptions regarding the personal antecedents of the enjoyment of learning will be presented, as well as empirical findings in this regard. Based on this, the hypothesis will be derived, and the results will then be presented and discussed.

1.1. Personal antecedents of achievement emotions

The CVTAE assumes that emotions can generally be triggered by the most diverse of personal and contextual characteristics and processes. In the area of personal characteristics and processes, these are, for instance, genetic dispositions, neurohormonal processes or cognitive appraisals. Cognitive appraisals are of particular importance in the school context, because, among other things, contextual factors such as instructional design primarily gain their emotional significance via cognitive appraisals of the students (Goetz et al., 2010; Pekrun, 2000, 2006; Pekrun et al., 2002b; Pekrun & Stephens, 2011).

In the context of the genesis of emotions, the CVTAE deems two types of cognitive appraisals to be central: *control*- and *value-related* appraisals (with regard to further emotion-relevant appraisals, cf., for instance, Goetz et al., 2010). Situation-specific control- and value-related appraisals constitute the proximal–personal antecedents of emotions, and generalised, cross-situational control- and value-related beliefs constitute the distal–personal antecedents of emotions (Frenzel et al., 2009; Pekrun, 2006; Pekrun, Frenzel et al., 2007).

Control-related appraisals and beliefs (described in the following as *perceived control* or in short as *control*) refer to the "perceived causal influence of an agent over actions and outcomes" (Pekrun, 2006, p. 317) or the "perceived controllability of achievement-related actions and outcomes" (Pekrun & Stephens, 2011, p. 13). According to Pintrich and Schunk (2002), the key question in terms of control is: "*Can I do it*?". Control encompasses constructs such as expectation of success, academic self-concept, self-efficacy beliefs etc. (regarding the differences between various control-related constructs, cf. Pekrun, 2006; Skinner, 1996). In terms of value-related appraisals and beliefs (described in the following as *perceived value* or in short as *value*), the concern is with the "perceived valences of actions and outcomes" (Pekrun, 2006, p. 317) or the "subjective importance of these activities and outcomes" (Pekrun & Stephens, 2011, p. 13). According to Pintrich and Schunk (2002), the central question here is: "*Do I want to do it, and why*?". Value encompasses constructs such as the importance, the instrumental usefulness or the intrinsic incentive of an activity, an object, or an outcome (with regard to the differences between various value-related constructs, cf. Eccles, 2005; Pekrun, 2006).

The CVTAE postulates that specific characterisations of control and value underlie distinct emotions, and that both components are necessary for the occurrence of the vast majority of emotions (Frenzel et al., 2009; Pekrun, 2000, 2006; Pekrun, Frenzel et al., 2007; Pekrun et al., 2002b; Pekrun & Stephens, 2011), including for the occurrence of enjoyment of learning. Therefore, in the following presentation of the empirical findings, only studies are considered in which all three constructs of interest were included in the analyses.

1.2. Assumptions concerning the relationship of perceived control, perceived value, and enjoyment of learning

In terms of the enjoyment of learning, the CVTAE postulates *firstly* that this occurs when the perceived control and the perceived value are positive. Pekrun (2006), for instance, writes: "If an achievement activity (e.g., studying) and the material to which it relates (e.g. learning material) are positively valued, and if the activity is perceived as being sufficiently controllable by the self, enjoyment is assumed to be instigated" (p. 323). Meanwhile, some empirical findings from cross-sectional and longitudinal studies exist in this regard, with samples of different age groups (primary school to university level). For instance, the postulated positive relationships between control, value and enjoyment of learning are found in correlational studies (Pekrun, 1998, 2000; Pekrun & Hofmann, 1999; Titz, 2001). Moreover, control and value also prove to be predictors of the enjoyment of learning in multiple regressions, path analyses, structural equation models or multi-level analyses; the more positive the control and value, the higher the enjoyment of learning (Buff, Reusser, Rakoczy, & Pauli, 2011; Frenzel, Pekrun, & Goetz, 2007; Goetz, Pekrun, Hall, & Haag, 2006; Goetz et al., 2010; Hagenauer & Hascher, 2011; Jullien, 2006).

More interesting is a *second* assumption, which concerns change–change processes. This assumption becomes clear in statements such as: "The control-value theory implies that students' emotions can be positively influenced by fostering their perceptions of competence and control over academic activities and outcomes, and by shaping their appraisals of the values of these activities and outcomes" (Pekrun, 2006, p. 334; cf. also Frenzel et al., 2009; Pekrun et al., 2002a; Pekrun & Stephens, 2011). What is being expressed here is that changes in the students' control and value appraisals and beliefs entail, or rather predict, changes in their enjoyment of learning. It needs to be kept in mind that the focus of such change–change processes is on intraindividual changes or developments, their causes, and consequences. This assumption is of central importance for school practice as it shows a possibility for "how to design learning environments and educational settings in 'emotionally sound' ways" (Astleitner, 2000, p. 169); specifically, via a positive exertion of influence on the perceived control and the perceived value (cf. Frenzel et al., 2009; Pekrun, 2006; Pekrun, Frenzel et al., 2007; Pekrun & Stephens, 2011). Goetz et al. (2010) note in this respect that while "positive emotions can be enhanced by modifying *either* perceptions of personal control *or* value-related cognitions, the most efficacious investment of intervention-related resources would involve programs that promote *both*" (p. 59).

1.3. The present study — hypothesis

The current contribution focuses on assumptions of the CVTAE regarding the relationships between the enjoyment of learning and its personal antecedents. In the CVTAE, perceived control and perceived value are deemed as the central personal antecedents of the enjoyment of learning; the more positive the control and value, the higher the enjoyment of learning. By contrast, to our knowledge, there are no empirical findings regarding a further assumption: positive *changes* in control and value *longitudinally predict* positive *changes* in the enjoyment of learning. This shortcoming is explicitly pointed out, for instance, by Goetz et al. (2010). If the change–change assumption is confirmed, an important prerequisite is fulfilled for the assumption that the positive pedagogical–educational exertion of influence on control and value of the students represents a way in which to increase their enjoyment of learning.

Against this background, the empirical part of this contribution concentrates on the second assumption, namely the change–change assumption. The following hypothesis is tested: Positive intraindividual changes in perceived control and value *longitudinally predict* positive intraindividual changes in enjoyment of learning.

2. Method

2.1. Sample

The sample comprises $N = 431$ students (52.4% female) who participated in the study TRANSITION: Parental support and motivation–affective development in the transition to lower secondary level (Buff