Intraindividual relations between achievement goals and discrete achievement emotions: An experience sampling approach

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ABSTRACT

Theories on the link between achievement goals and achievement emotions focus on their within-person functional relationship (i.e., intraindividual relations). However, empirical studies have failed to analyze these intraindividual relations and have instead examined between-person covariation of the two constructs (i.e., interindividual relations). Aiming to better connect theory and empirical research, the present study ($N = 120$ 10th grade students) analyzed intraindividual relations by assessing students' state goals and emotions using experience sampling ($N = 1409$ assessments within persons). In order to replicate previous findings on interindividual relations, students' trait goals and emotions were assessed using self-report questionnaires. Despite being statistically independent, both types of relations were consistent with theoretical expectations, as shown by multi-level modeling: Mastery goals were positive predictors of enjoyment and negative predictors of boredom and anger; performance-approach goals were positive predictors of pride; and performance-avoidance goals were positive predictors of anxiety and shame. Reasons for the convergence of intra- and interindividual findings, directions for future research, and implications for educational practice are discussed.

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"*Tell me what you want and I tell you what you feel*" (adapted proverb, Brillat-Savarin, 1825/1999)

1. Introduction

Achievement emotions have attracted increasing attention during the last 20 years due to cumulative empirical evidence showing that they can exert profound effects on students' learning and academic agency. Achievement emotions shape students' learning behavior, influence their academic attainment, guide their decisions to persist or drop out of academic programs, and represent core elements of their psychological well-being (Pekrun & Linnenbrink-Garcia, 2014). Given our current knowledge on the relevance of achievement emotions, it is important to examine

their antecedents. Knowledge on the origins of achievement emotions is needed for the development of classroom practices and intervention programs that foster adaptive achievement emotions and reduce maladaptive emotions. Among the potentially relevant proximal antecedents of achievement emotions, students' achievement goals are likely of pivotal importance (Huang, 2011; Linnenbrink-Garcia & Barger, 2014; Pekrun, Elliot, & Maier, 2006). Learning environments, as distal antecedents of students' achievement emotions, could be designed in such a way that they positively influence students' achievement goals, thus also fostering their emotions.

Several theoretical models have been proffered to explain the link between achievement goals and emotions (e.g., Linnenbrink & Pintrich, 2002; Pekrun et al., 2006, Pekrun, Elliot, & Maier, 2009), and numerous empirical studies have been conducted to test these models. However, while these theoretical models refer to within-person functioning (i.e., intraindividual relations), the available empirical evidence is nearly exclusively based on the analysis of between-person covariation of the two constructs (i.e., interindividual relations). Consequently, the existing empirical findings do

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not provide direct evidence on the validity of the theories.

Generally, most psychological theories focus on intraindividual psychological functioning, and the same holds true for educational theories of student learning. However, despite this within-person focus, empirical studies typically have examined interindividual (i.e., between-person) relations between variables. Voelkle, Brose, Schmiedek, and Lindenberger (2014) estimated that about 90% of empirical research in psychology is based on the analysis of between-person variation. However, it is not possible to infer intraindividual relations from findings on relations based on interindividual data (and vice versa), as both types of relations refer to different distributions of variables, namely to distributions within persons (intraindividual approach) versus between persons (interindividual approach; Molenaar, 2004; Molenaar & Campbell, 2009). As noted by Schmitz and Skinner (1993, p. 1010), "These two correlations [i.e., interindividual vs. intraindividual correlations] are statistically independent, and their direction and magnitude can vary widely" (see also Schmitz, 1987; Voelkle et al., 2014). A classic example illustrating the independence of inter- and intraindividual relations was provided by Schmitz and Skinner (1993): The positive interindividual correlation between sleep duration and frequency of migraine headaches seemingly implies that sleeping late can lead to headaches (or vice versa). Such a conclusion would be misleading, however, because these two variables are correlated negatively within individuals, implying that headaches occur in combination with shorter duration of sleep.

The present study had two primary aims. First, we sought to replicate previous findings on the interindividual relations between three commonly endorsed achievement goals (mastery, performance-approach, performance-avoidance) and six discrete achievement emotions (enjoyment, pride, anxiety, shame, anger, boredom). To evaluate interindividual relations, we used self-report scales to assess students' relatively enduring, trait-like (henceforth "trait") achievement goals and emotions. Second, and most importantly, we sought to move beyond the traditional interindividual perspective by analyzing the intraindividual relations of these variables. To do so, we assessed students' state achievement goals and achievement emotions employing the experience sampling method (Hektner, Schmidt, & Csikszentmihalyi, 2007) with multiple assessments within each student.

1.1. Concepts of achievement goals and achievement emotions

Achievement goals are defined as "competence-based aims used to guide behavior" (Elliot, Murayama, & Pekrun, 2011, p. 632). Two basic types of achievement goals are mastery goals, which refer to attaining mastery standards and developing competence, and performance goals, which refer to attaining normative standards (i.e., performance relative to others; Linnenbrink-Garcia & Barger, 2014), often to demonstrate competence. Further, in the trichotomous achievement goal framework (Elliot & Harackiewicz, 1996), two types of performance goals have been differentiated, namely *performance-approach* goals, which refer to outperforming others, and *performance-avoidance* goals, which refer to not performing poorly relative to others. In the present research, we adopt this trichotomous goal framework, because the goals addressed in this framework are the most frequently endorsed by high school students (Elliot & McGregor, 2001; Pekrun et al., 2006, 2009).

Achievement emotions can be defined as emotions regarding achievement activities or achievement outcomes (Pekrun, 2006). In addition to this object focus (activity vs. outcome), achievement emotions can be grouped according to their valence (positive vs. negative). Taking both object focus and valence into account renders a 2 × 2 taxonomy (Pekrun et al., 2006) grouping these emotions as follows: (a) activity/positive (e.g., enjoyment), (b) activity/

negative (e.g., boredom, anger), (c) outcome/positive (e.g., hope, pride), and (d) outcome/negative (e.g., anxiety, hopelessness, shame).

1.2. Previous research

1.2.1. Theoretical assumptions

Pekrun et al. (2006, 2009) developed a theoretical model that links the goals from the trichotomous achievement goal framework (i.e., mastery, performance-approach, and performance-avoidance; Elliot & Harackiewicz, 1996) to various discrete achievement emotions. The authors grounded their work in Pekrun's (2006) control-value theory which posits that the perceived controllability and the subjective value of achievement activities and outcomes function as proximal antecedents of achievement emotions. Mastery goals are proposed to focus attention on the controllability and positive value of achievement activities, thus fostering positive activity emotions (e.g., enjoyment) and reducing negative activity emotions (e.g., boredom and anger). Performance-approach goals are proposed to focus attention on attaining success outcomes, the controllability of these outcomes, and their positive value, implying that they should promote positive outcome emotions (e.g., pride). Performance-avoidance goals focus attention on possible failure outcomes, the uncontrollability of these outcomes, and their negative value, implying that they promote negative outcome emotions (e.g., anxiety and shame).

1.2.2. Empirical findings

Based on empirical reviews by Huang (2011) and Linnenbrink-Garcia and Barger (2014), and an additional search of the literature using the PsycINFO and ERIC databases, we found that there are at least 94 studies on the relations between achievement goals and affect or emotions (77 studies were reported by Huang, 2011, 9 additional studies by Linnenbrink-Garcia and Barger (2014), and 8 additional studies were identified in our search). Overall, the findings support the predictions from Pekrun et al.'s (2006, 2009) model. Specifically, multiple studies have found that mastery goals relate positively to students' enjoyment (e.g., Daniels et al., 2008, 2009; King, McInerney, & Watkins, 2012; Shih, 2008) and that performance-avoidance goals relate positively to students' anxiety (e.g., Bong, 2009; Duchesne & Ratelle, 2010; Putwain & Symes, 2012; Shih, 2005; Sideridis, 2008). Both of these links are well documented, and the findings are largely consistent across studies (Huang, 2011). For emotions other than enjoyment and anxiety, the empirical evidence for relations with achievement goals is scarce, but also largely supports the expected relations. For example, Daniels et al. (2008, 2009) found that mastery goals were negatively related to boredom and anger, King et al. (2012) found performance-approach goals to be positively related to hope and pride, and Pekrun et al. (2006, 2009) reported positive relations of performance-avoidance goals with hopelessness and shame.

All of the available studies, however, have examined the interindividual relations (i.e., between-person covariation) of achievement goals and emotions, with only two exceptions. Schantz and Conroy (2009) investigated the intraindividual relations between goals from the 2 × 2 achievement goal framework and affect (happy vs. unhappy) during a round of golf (18 holes) in collegiate golfers. Goals and affect were assessed immediately before teeing off on every hole. Results showed that golfers reported higher levels of happiness at the beginning of holes if they had low performance-approach goals or low mastery-avoidance goals during the round (means over round) or endorsed lower-than-usual mastery-avoidance goals for that hole. Rebar and Conroy (2013) investigated the impact of experimentally manipulated state achievement goals from the 2 × 2 framework on undergraduate students' experiences