Learning and Instruction 47 (2017) 53–64

Contents lists available at ScienceDirect

Learning and Instruction

journal homepage: www.elsevier.com/locate/learninstruc

Situational expectancies and task values: Associations with students' effort

Julia Dietrich [a, *], Jaana Viljaranta [b, d], Julia Moeller [c], Bärbel Kracke [a]

[a] Institute of Educational Science, University of Jena, 07743 Jena, Germany
[b] Department of Psychology, University of Jyväskylä, P.O. Box 35, FI-40014, Finland
[c] Yale Center for Emotional Intelligence, Yale University, 340 Edwards Street, P.O. Box 208376, New Haven, 06520-8376 CT, USA
[d] School of Educational Sciences and Psychology, University of Eastern Finland, PL 111, 80101 Joensuu, Finland

ARTICLE INFO

Article history:
Received 13 October 2015
Received in revised form
17 September 2016
Accepted 24 October 2016
Available online 2 November 2016

Keywords:
Student motivation
Situational variability
Diary study
Expectancy-value theory
Pre-service teacher students

ABSTRACT

According to expectancy-value theory, expectancies and task values are precursors for investing effort into learning. To date, it remains largely unknown (1) to what extent expectancies and values change from one learning situation to another and (2) to what extent inter-individual findings reflect intra-individual motivational processes. We applied an intensive longitudinal design in a sample of 155 pre-service teacher students attending a lecture. Across ten lessons with varying topics, students reported three times per lesson on their situational effort, expectancies, task values (intrinsic, attainment, utility), and cost. We used multilevel structural equation modeling with learning situations (L1), nested in topics (L2), and nested in students (L3). The results showed variability on all levels. We found positive associations of effort with task values on each level, positive associations with expectancies on the learning situation and topic levels, and smaller negative associations with cost on the topic level.

1. Introduction

According to expectancy-value theory, students attribute value to specific tasks and have expectations about their competency and possible success in these tasks (Eccles & Wigfield, 2002; Wigfield & Cambria, 2010). These task values and success expectancies influence the tasks that students will choose, remain engaged in, and invest effort into. However, while expectancy-value theory makes assumptions about the experience of specific tasks, students' task- and situation-specific experiences have rarely been studied. Most previous studies have concentrated on the broader values and expectancies that students attribute to domains and (school) subjects (e.g., Dietrich, Dicke, Kracke, & Noack, 2015; Perez, Cromley, & Kaplan, 2014; Viljaranta, Kiuru, Lerkkanen, Poikkeus, & Nurmi, 2016).

The present study examines more situation-specific aspects by investigating the extent to which individual students' expectancies and values fluctuate between different learning situations and topics. Moreover, we investigate the extent to which the findings of previous studies regarding the role of expectancies and values in students' investment of effort in learning hold true on the level of specific topics and learning situations.

We test our hypotheses in a sample of preservice teacher students attending a lecture in Educational Psychology. Few studies have examined teacher students' learning and motivation while acquiring general pedagogical and psychological knowledge (e.g., Rösler, Zimmermann, Bauer, Möller, & Köller, 2013), whereas more research focuses on the impact of teacher students' field learning experiences (e.g., Anderson & Stillman, 2013; Hascher & Hagenauer, 2016). Our study hence addresses two gaps: Examining expectancies and values as in-the-moment experiences, and examining the learning motivation of teacher students in a theory-focused course.

1.1. Expectancy-value theory

Developed by Eccles et al. (1983), modern expectancy-value theory posits that individuals' achievement, choices of and persistence in given tasks are influenced by two components: students' expectancies of successfully completing these tasks as well as the subjective value that they attribute to these tasks. Eccles' theory differentiates the expectancy component into ability beliefs about competence in a given domain and expectations of success in an impending task. Previous studies have found that students do not

* Corresponding author. University of Jena, Institute of Educational Science, Am Planetarium 4, 07743 Jena, Germany.
E-mail address: julia.dietrich@uni-jena.de (J. Dietrich).

http://dx.doi.org/10.1016/j.learninstruc.2016.10.009
0959-4752/

seem to differentiate between general competence beliefs (such as academic self-concepts) and more task-specific expectancy beliefs (see Eccles & Wigfield, 2002), which is why both have often been collapsed into a single construct. Many existing studies also exclusively concentrate on academic self-concept to measure the expectancy component (e.g., Taskinen, Dietrich, & Kracke, 2016; Viljaranta et al., 2016). In line with expectancy-value theory, our study operationalizes the expectancy component with two facets: success expectations and perceived competence.

In addition to expectancies, the theory differentiates the task value component into four facets: intrinsic value, attainment value, utility value, and cost (Eccles & Wigfield, 2002). Intrinsic value refers to the enjoyment a person derives from performing an activity or his or her subjective interest in a subject. Attainment value, in turn, refers to the personal importance of succeeding in a specific task. Utility value indicates the perceived usefulness of engagement and achievement in a particular domain. Finally, cost refers to the perceived negative consequences of engaging in a specific task. In many existing studies, the three value facets of intrinsic, attainment, and utility value have empirically shown relatively high inter-correlations, and therefore, they have often been collapsed into a single, more general value scale (e.g., Eccles, Wigfield, Harold, & Blumenfeld, 1993; Gniewosz & Noack, 2012; Perez et al., 2014; Viljaranta, Nurmi, Aunola, & Salmela-Aro, 2009). Other, more recent studies went more into detail, measuring subfacets of task values. For example, these studies split cost value into effort cost, emotional cost, and opportunity cost (Gaspard et al., 2015; Perez et al., 2014). Going further, current work by Barron and Hulleman (2015) and Flake, Barron, Hulleman, McCoach, and Welsh (2015) proposed cost being a distinct third component besides expectancy and value.

Our study assesses all four facets (intrinsic, attainment, utility, and cost) of the task value component based on the research by Gaspard et al. (2015). In the case of attainment value and utility value, we used one specific subfacet (attainment: personal importance; utility for future job) to operationalize each of the facets. We selected these subfacets assuming that they might be most relevant to our context of teacher students attending a lecture on Educational Psychology: Both relate to students' long-term (occupational) goals. Given that cost has been shown distinct from the other task values (Flake et al., 2015; Perez et al., 2014), we assessed it with the three subfacets effort cost, emotional cost, and opportunity cost, reasoning that all are potentially relevant in the lecture context: Effort cost as the exhaustion caused by following the lecture, emotional cost as the immediate negative psychological consequences caused by lecture participation, and opportunity cost as giving up other valued activities for engaging in class.

A number of studies with students in both primary, secondary and tertiary education indicate that both expectancies and values relate to various academic outcomes, including performance, choices, effort, and persistence in achievement-related activities (e.g., Cole, Bergin, & Whittaker, 2008; Durik, Vida, & Eccles, 2006; Liem, Lau, & Nie, 2008; Reese & Dietrich, 2014; Trautwein & Lüdtke, 2007; see Wigfield & Cambria, 2010, for a review). However, there is a dearth of empirical evidence on the role of cost; the few studies focusing on this facet of values show that perceived cost is primarily linked to academic choices (Battle & Wigfield, 2003; Perez et al., 2014). In this study, we focus on the effort students invest in learning as a central type of adaptive academic behavior and the role that expectancies and values play.

1.2. Inter-individual versus situational (intra-individual) approaches to expectancies and values

The expectancy-value theory of Eccles et al. (1983) was originally developed to explain why women were less likely than men to choose math and science fields as careers. The model sought to explain how relatively stable inter-individual differences in values and expectancies predicted people's choices of different kinds of careers. In other words, research on modern expectancy-value theory has studied inter-individual variation in motivation. More recently, motivational researchers have begun to adopt a complementary intra-individual approach, which investigates how the motivational experience of an individual differs between situations (e.g., Csikszentmihalyi & Schneider, 2000; Malmberg, Pakarinen, Vasalampi, & Nurmi, 2015; Martin et al., 2015; Vancouver & Kendall, 2006). If applied to expectancy-value theory, the intra-individual approach is reminiscent of early formulations of the theory, such as that of Atkinson (1957). Research on early expectancy-value theory focused on both situational and inter-individual aspects of motivation and typically applied abstract experimental settings. With the adaptation of expectancy-value theory by Eccles and colleagues, the research focus shifted to real-life settings but, at the same time, shifted away from analyzing intra-individual mechanisms toward investigating inter-individual differences (see Wigfield & Cambria, 2010).

In addition to inter-individual differences, that is, differences between students, this article focuses on the situation-specific aspects of expectancies and values and their intra-individual fluctuation from one situation to another. Measuring situational task values and expectancies in the moments in which they occur enables researchers to address important research questions. First, to what extent do these beliefs represent rather stable motivational dispositions or are alterable through micro-changes in specific learning situations? Second, which malleable characteristics of a situation can change motivational beliefs? And third, how do stable motivational patterns emerge out of repeated experiences? From a practical perspective, answers to these questions can offer insights into how teachers and educators can foster and sustain motivation in specific learning tasks for different kinds of students.

Finally, a methodological argument supports an examination of the intra-individual variation of expectancies and values. Methodologists (e.g., Hamaker, 2012; Molenaar, 2013) have highlighted that findings obtained from inter-individual data are based on group-level statistics like means and correlations. These findings can only be transferred to the level of individual students under very restrictive conditions (see Molenaar, 2013). This makes it intricate to draw conclusions from the inter-individual results of most studies ("students with high intrinsic task value tend to exert more effort on certain types of tasks") to the intra-individual mechanisms pertaining to individual students ("if an individual student is intrinsically motivated for a given task, then she will invest more effort than on a task for which she holds low intrinsic motivation").

1.3. Expectancies and values on the level of situations, topics, and students

It is possible to look at the variability of motivation within individual students and its relationship with effort on different levels. The lowest level describes fluctuations between different learning situations or episodes (*learning situation level*). This level concerns real-time motivational processes or learning experiences defined as relatively cursory psychological states. A student's motivational state might change for several reasons. It might depend on the learning contents, such as the introduction of a new topic, learning about a theory, or practical applications. It might also depend on the type of task, such as when the student shifts from one task (e.g., listening to the teacher) to another (e.g., reading a text or doing calculations), and the extent to which these tasks are structured by