Online learning: Are subjective perceptions of instructional context related to academic success?

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A B S T R A C T

This study explored the extent to which students' thoughts, feelings, and actions are associated with the nature of an online course and how that course relates to them personally. Following completion of an online course in aviation physiology, service academy undergraduates ($N = 481$) completed a survey that assessed several motivational, emotional, and behavioral outcomes. Consistent with expectations, results from a logistic regression analysis revealed that students who said they were planning to become aviators upon graduation were more likely to report greater perceptions of task value and greater use of metacognitive control strategies than their non-aviator counterparts. On the other hand, after controlling for the other variables in the model, aviators were actually less likely to report being satisfied with the online course, an unexpected finding. Taken together, these results partially substantiate the social cognitive notion that subjective perceptions of the learning environment ultimately shape students' motivational and behavioral engagement in that environment. Implications for the theory and research of online learning are discussed.
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1. Introduction

Institutions worldwide have recognized the Internet's value as an instructional tool and have developed, or are developing, online learning programs (Allen & Seaman, 2008; Larreamendy-Joerns & Leinhardt, 2006). Military organizations are no exception (Curda & Curda, 2003). For example, the U.S. military has acknowledged the utility of online learning and has created a collaborative effort between the public and private sectors to develop the standards, tools, and learning content necessary to harness the power of information technologies to modernize its training (Fletcher, Tobias, & Wisher, 2007). Known as the Advanced Distributed Learning Initiative, this effort, which began in 1997, is meant to provide cost-effective, high-quality, tailored education and training to the military's more than three million personnel anytime, anywhere (Bonk & Dennen, 2005). As one might expect, online learning is considered a critical component of the Advanced Distributed Learning Initiative (Fletcher et al., 2007).

The growth of online learning has resulted in a plethora of empirical investigations (Sitzmann, Kraiger, Stewart, & Wisher, 2006; Tallent-Runnels et al., 2006). Traditionally, however, research in this area has been dominated by group-comparison studies that assess the attitudes and achievements of online learners versus classroom students (Bernard et al., 2004). With few exceptions, findings have commonly yielded *no significant differences* in various attitude and

performance outcomes when similar instructional methods are employed (Bernard et al., 2004; Sitzmann et al., 2006; Zhao, Lei, Yan, Lai, & Tan, 2005). Although important, such group-comparison studies have provided only a modicum of generalizable knowledge for the theory, research, and practice of online learning (Bernard et al., 2004; Gunawardena & McIsaac, 2004). Furthermore, although online learning has been examined extensively in higher education, few studies have explored online instruction in the context of military training (Wisher, 2006; Wisher & Champagne, 2000). And while education and training share many of the same psychological constructs (e.g., learning, motivation, transfer, and memory), the two contexts are distinguished from one another by "fundamental differences in their goals, outcomes, and eventual application of the underlying instruction" (Bonk & Wisher, 2000, p. 3).

The present investigation sought to address these gaps in the online learning literature. In particular, this study tackled recent recommendations to move beyond group-comparison studies (e.g., Abrami & Bernard, 2006; Bernard et al., 2004). Moreover, this study examined online learning in the context of an authentic military training environment (Wisher & Champagne, 2000). In doing so, this investigation was meant to provide insight into how military students actually go about learning in online training contexts.

2. Theoretical framework

Models of self-regulated learning describe a continuous cycle of cognitive, motivational, and behavioral activities that are central to learning and knowledge construction (Azevedo, 2005). Students

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who are said to be highly self-regulated are active participants who generate the thoughts, feelings, and actions necessary to attain their goals by actively planning, monitoring, and regulating their cognition, motivation, and behavior (Lajoie & Azevedo, 2006). As such, self-regulated learners are thought to be particularly well suited to succeed in autonomous online learning environments (Dabbagh & Kitsantas, 2004; Hartley & Bendixen, 2001). Thus, as a multi-dimensional construct that integrates cognitive, motivational, and behavioral components of learning, self-regulated learning has been adopted by many scholars as a practical theoretical framework for understanding student success in online settings (e.g., Azevedo, 2007; Lynch & Dembo, 2004; Miltiadou & Savenye, 2003; Whipp & Chiarelli, 2004).

The current study employed a conceptual model of self-regulation that is based on several decades of research and theory on self-regulated learning and related motivational and affective constructs (see Fig. 1). This conceptual model, informed by social cognitive theories of self-regulation as formulated by Bandura (1997), Pintrich (2000), and Zimmerman (2000), provides the theoretical foundation upon which the present study is built.

In brief, the conceptual model contains four interacting components: (a) contextual features of the online learning environment, (b) personal factors (motivational beliefs and achievement emotions), (c) personal behaviors (use of cognitive and metacognitive learning strategies), and (d) several additional academic outcomes (achievement, satisfaction, and continuing motivation). According to well-established theory, contextual features of the learning environment are thought to influence motivational beliefs, including students' confidence in their ability to attain designated types of performances (i.e., their self-efficacy beliefs; Bandura, 1997) and the extent to which students find a learning activity interesting, important, and useful (i.e., their task value beliefs; Eccles & Wigfield, 2002). Moreover, these beliefs are assumed to be proximal antecedents of discrete achievement emotions (e.g., enjoyment and anxiety; Pekrun, 2006), which, in turn, influence students' use of various learning strategies, such as elaboration and metacognition (Pekrun, Goetz, Titz, & Perry, 2002; Pintrich, 1999). Finally, students' use of learning strategies is believed to link directly to outcomes such as achievement, satisfaction, and continuing motivation (Pintrich, 2000; Schunk, Pintrich, & Meece, 2008). Thus, the use of learning strategies is posited to mediate the

relations between personal and contextual factors and actual learning and performance (Pintrich, 2000); that is, learners with more adaptive beliefs and emotions are also more likely to use cognitive and metacognitive learning strategies (Pintrich, 1999; Pintrich, Smith, Garcia, & McKeachie, 1993; Pekrun et al., 2002). In turn, the use of learning strategies is assumed to result in deeper processing of the material to be learned, which ultimately improves subsequent learning, performance, and motivation (Pintrich, 1995).

2.1. The critical role of subjective context

In the classic model of social cognitive theory, as conceptualized by Bandura (1986), contextual features of the learning environment are considered one of three determinants of human behavior. In particular, human functioning purportedly results from the triadic, dynamic, and reciprocal interaction of personal factors, behaviors, and the environment (Bandura, 1986). In short, personal factors (e.g., beliefs, expectations, attitudes, and prior knowledge), behaviors (e.g., individual actions, choices, and verbal statements), and the social and physical environment (e.g., resources, consequences of actions, other people, and physical settings) interact as determinants of one another.

The conceptual model utilized in the current study is based on Bandura's (1986) original framework; however, it differs slightly in that personal factors (beliefs and emotions) and academic behaviors (use of learning strategies) are embedded within, and ultimately influenced by, the learning environment. This difference is meant to highlight the importance of contextual features of the learning environment (classroom, online, or otherwise) and their ultimate affect–for better or worse–on the other learner-centered aspects of academic self-regulation (Boekaerts & Cascallar, 2006). Moreover, consistent with other models of social cognition (Pintrich, 2000; Zimmerman, 2000), the model assumes that instructional contexts are perceived and evaluated by students. In other words, the same *objective* environment (i.e., a self-paced online course in aviation physiology) may be perceived (or appraised) differently by different students. As such, it is the *subjective* environment that ultimately shapes students' beliefs, emotions, and academic behaviors (Roeser, Marachi, & Gehlbach, 2002). This is not to say, however, that subjective perceptions of the environment are fixed. Instead, these
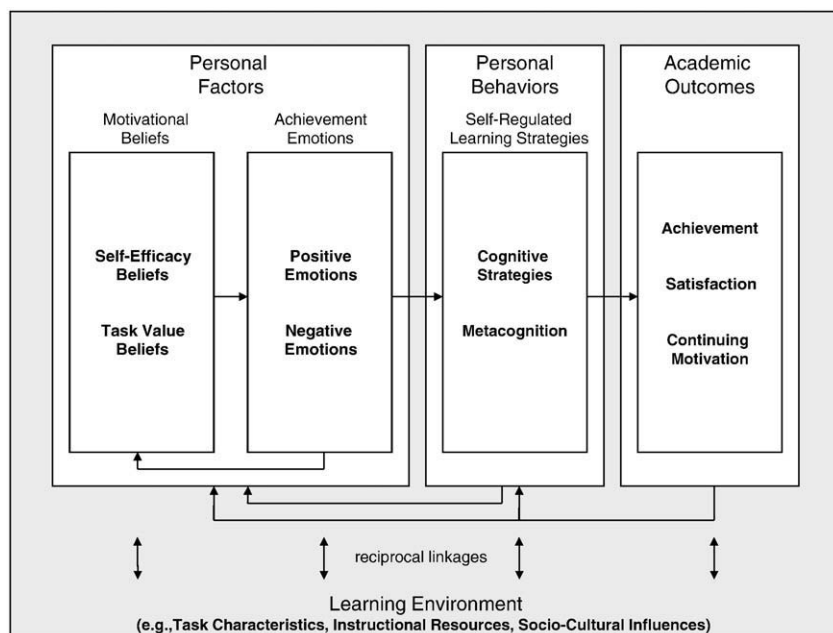

Fig. 1. A social cognitive model of self-regulated learning (adapted from Pekrun, 2006).