

# Understanding Satisfaction and Continuing Motivation in an Online Course: An Extension of Social Cognitive, Control-Value Theory\*

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**Abstract:** Using social cognitive, control-value theory as a framework, this study examined how students' cognitive appraisals (task value and self-efficacy) and negative achievement emotions (boredom and frustration) relate to their overall satisfaction with an online course and their continuing motivation to enroll in future courses. Service academy undergraduates ( $N = 481$ ) completed a survey that assessed these constructs. Structural equation modeling revealed that task value, self-efficacy, boredom, and frustration were all statistically significant predictors of satisfaction, accounting for 64% of its variance. Task value and self-efficacy had direct effects on satisfaction, as well as indirect effects through boredom and frustration. Moreover, self-efficacy and boredom had both direct and indirect effects on continuing motivation; whereas task value and frustration had only indirect effects through satisfaction. The final model accounted for 41% of the variance in continuing motivation. Educational implications are discussed.

Distance learning is hardly a new phenomenon. In the United States, for example, correspondence courses have provided distance learning to students around the country since the creation of the postal service in the 19th century (Phipps & Merisotis, 1999). Today, however, there is little doubt that the Internet has transformed the promise of teaching and learning from a distance (Dabbagh & Bannan-Ritland, 2005; Hill, Wiley, Nelson, & Han, 2004). In fact, even prestigious universities who once shunned distance learning are now making substantial investments in online learning technologies (Larreamendy-Joerns & Leinhardt, 2006; Moore, 2003). Concurrently, business and military organizations are attracted to the potential for online learning to provide "anytime, anywhere" access to education and training (Curda & Curda, 2003; Fletcher et al, 2007).

Traditionally, research in distance learning, generally, and online learning, more specifically, has been dominated by comparison studies; that is, investigations which compare the effectiveness of online learning with that of conventional classroom instruction. With few exceptions, results from several meta-analyses of these comparison studies have found no statistically significant differences between the learning outcomes of online and traditional students (e.g., Berge & Mrozowski, 2001; Bernard et al., 2004; Russell, 1999; Sitzmann, Kraiger, Stewart, & Wisher, 2006; Zhao, Lei, Yan, Lai, & Tan, 2005).

Recently, however, there has been a call for a paradigm shift in online learning research. Specifically, several scholars (e.g., Abrami & Bernard, 2006; Bernard et al., 2004) have encouraged researchers to move beyond between-group studies and to focus instead on within-group differences among online learners. In doing so, the hope is that future research will move the field forward by positively influencing instructional practice and providing policy makers with evidence-based guidance for implementing online learning programs (Bernard et al., 2004).

The present study addresses the call to explore within-group differences among online learners. It does so by employing a model of self-regulated learning to understand how students function in highly autonomous online learning situations. Because of its emphasis on learners and their active control of personal and environmental factors, self-regulated learning theory provides an excellent framework for studying online learners (Azevedo, Cromley, & Seibert, 2004; Dabbagh & Kitsantas, 2004; Hartley & Bendixen, 2001; Whipp & Chiarelli, 2004). In particular, this study examined how students' cognitive appraisals (task value and self-efficacy) and negative achievement emotions (boredom and frustration) relate to their overall satisfaction with online learning and their continuing motivation to enroll in future online courses.

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## Theoretical Framework

Self-regulated learning refers to “self-generated thoughts, feelings, and behaviors that are oriented to attaining goals” (Zimmerman, 2002, p. 65). Self-regulated learners are generally characterized as active participants who efficiently control their own learning experiences in many different ways, including establishing a productive work environment and using resources effectively; rehearsing, elaborating, and organizing information to be learned; maintaining positive emotions during academic tasks; and holding positive motivational beliefs about their capabilities, the value of learning, and the factors that influence learning (Schunk & Zimmerman, 1994, 1998). In other words, “they generate the thoughts, feelings, and actions necessary to attain their goals by actively planning, monitoring, regulating, and controlling their cognition, motivation, behavior, and context” (Lajoie & Azevedo, 2006, p. 811).

Although student emotions have historically been considered an important part of many motivational theories (Schunk, Pintrich, & Meece, 2008), the role of emotions have been largely ignored in contemporary social cognitive theories of motivation and self-regulation (Linnenbrink & Pintrich, 2002, 2004). In recent years, several researchers (e.g., Goetz, Pekrun, Hall, & Haag, 2006; Linnenbrink & Pintrich, 2002, 2004; Pekrun, Elliot, & Maier, 2006; Pekrun, Goetz, Titz, & Perry, 2002) have acknowledged the importance of achievement-related emotions and their influence on cognitive engagement and learning, and have begun integrating them into theories of academic self-regulation. For instance, Pekrun (2000, 2006) has developed a social cognitive, control-value theory of *achievement emotions*, where achievement emotions are defined as “emotions tied directly to achievement activities or achievement outcomes” (Pekrun, 2006, p. 317). In particular, social cognitive, control-value theory outlines hypothesized linkages between students’ cognitive appraisals, their achievement emotions, and, ultimately, their learning, performance, and continuing motivation. According to Pekrun’s theory, positive achievement emotions, such as enjoyment and hope, and negative emotions, such as boredom and frustration, are determined, in part, by students’ cognitive appraisals, also known as their motivational beliefs. Furthermore, the effects of emotions on learning and performance are thought to be mediated, in part, by several cognitive and motivational mechanisms, such as students’ use of learning strategies, effort allocation, and persistence (Pekrun et al., 2002).

Among the many categories of cognitive appraisals that are thought to be important antecedents of achievement emotions, Pekrun (2000, 2006) has suggested that two appraisals are critical in achievement contexts: the subjective value of achievement activities and their outcomes (e.g., task value), and the perceived controllability of these activities and outcomes, as indicated by competence perceptions (e.g., self-efficacy). Furthermore, in keeping with control-value theory, the relationship between motivational beliefs and emotions is thought to be bidirectional. That is, “control and value appraisals are posited to be antecedents of emotions, but emotions can reciprocally affect these appraisals” (Pekrun, 2006, p. 327).

Using social cognitive, control-value theory as a framework, several studies with university students in traditional classrooms have found that achievement emotions are related in significant ways to measures of students’ academic success (Pekrun et al., 2002). In particular, negative achievement emotions (e.g., boredom and anger) correlated negatively with motivational variables (e.g., interest and effort) and measures of learning strategies use (e.g., elaboration and metacognition); whereas positive emotions (e.g., enjoyment and hope) related positively to these same outcomes.

Aside from the research described above, a review of the literature revealed very few empirical studies that have directly examined how cognitive appraisals and achievement emotions are related in academic settings, and, moreover, how these constructs relate to other adaptive academic outcomes, such as satisfaction and continuing motivation to learn. Furthermore, limited findings from traditional classrooms have suggested that there may be a “complex interplay among affect, cognition, and motivation that needs to be further investigated” (Linnenbrink & Pintrich, 2004, p. 83).

## Purpose of the Study

The purpose of the present study was to begin addressing this complex interplay among emotion, cognition, and motivation, in an effort to better understand how students “go about learning” in online situations (Richardson & Newby, 2006). In particular, the study was designed to determine how students’ cognitive appraisals (task value and self-efficacy) and negative achievement emotions (boredom and frustration) relate to their overall satisfaction with a self-paced online course and their continuing motivation to enroll in future online courses. Satisfaction and continuing motivation were chosen as important outcomes because several scholars have found that student satisfaction is a powerful predictor of course drop-out rate (Dabbagh & Bannan-Ritland, 2005; Moore & Kearsley, 2005). In turn, satisfaction has been found to be an important predictor of students’ continuing motivation to enroll in future online courses (Chiu, Sun, Sun, & Ju, 2007; Chyung, 2001; Roca, Chiu, & Martinez, 2006). Moreover, this study focused on *negative* achievement emotions because earlier work with a similar sample revealed that many students had negative feelings about online learning (Artino & McCoach, in press).

The following three hypotheses were developed for the present study:

- (1) Cognitive appraisals (task value and self-efficacy beliefs) will negatively predict students’ achievement emotions (boredom and frustration).
- (2) Cognitive appraisals and achievement emotions will predict student satisfaction with a self-paced online course.
- (3) Satisfaction will positively predict of students’ continuing motivation to take future online courses.

## Method

### *Participants*

Participants included a convenience sample of 481 undergraduates from a U.S. service academy. The sample included 398 men (83%) and 83 women (17%). The mean age of the participants was 20.5 years ( $SD = 1.0$ ; range 19-24).

### *Instructional Materials*

The instructional materials consisted of a self-paced online course developed by the U.S. Navy. Self-paced online courses are a specific type of online learning in which students use a Web browser to access a course management system and complete Web-based courses at their own pace. While completing these courses, students do not interact with an instructor or other students. The particular self-paced online course used in this study was the first part of a two-stage training program in aviation survival training that was required for all service academy undergraduates (sophomores and juniors). Upon successful completion of this online course, students advanced to the second stage of their training, which consisted of traditional instruction at a local training unit.

The online course was composed of four, 40-minute lessons. Each lesson included text, graphics, and video, as well as several interactive activities.

### *Procedures*

Approximately one month after completing the online course, participants arrived at a local training unit for the face-to-face portion of their instruction. Prior to any classroom training, students were invited to complete an anonymous self-report survey about their thoughts, feelings, and actions during online learning. Participation in the survey was completely voluntary; 100% of students completed the survey.

### *Instrumentation*

The instrument used in this study consisted of 50 items divided into two sections. The first section included 41 Likert-type items with a response scale ranging from 1 (*completely disagree*) to 7

(*completely agree*). The items in this section were further subdivided into eight subscales, five of which were used in this study:

- *Cognitive appraisals*. Two subscales were adapted from Artino and McCoach (in press) and assessed students' cognitive appraisals: (a) a six-item *task value* subscale assessed students' judgments of how interesting, useful, and important the online course was to them; and (b) a five-item *self-efficacy* subscale assessed students' confidence in their ability to learn the material presented in a self-paced, online format.

- *Negative achievement emotions*. Two subscales were adapted from Pekrun, Goetz, and Perry (2005) and assessed students' negative achievement emotions: (a) a five-item *boredom* subscale assessed students' course-related boredom; and (b) a four-item *frustration* subscale assessed students' course-related frustration, annoyance, and irritation.

- *Satisfaction*. Students' overall *satisfaction* with the online course was assessed with a three-item subscale adapted from Artino (2007).

Section two of the survey included the following item used as an outcome variable in the study:

- *Continuing motivation*. Maehr (1976) defined continuing motivation as "the tendency to return to and continue working on tasks away from the instructional context in which they were initially confronted" (p. 443). Over the last 30 years, continuing motivation has been used by researchers as a key behavioral indicator of learner motivation (e.g., Kinzie & Sullivan, 1989; Klein, Erchul, & Pridemore, 1994). In this study, continuing motivation was assessed with a single self-report item: "Considering your experience with this online course, would you choose to enroll in another self-paced online Navy course in the future? Please answer this question as if the choice were completely up to you." The response scale ranged from 1 (*definitely will not enroll*) to 6 (*definitely will enroll*).

## Results

Results are divided into three main sections: (1) findings from a confirmatory factor analysis (CFA) aimed at validating the hypothesized measurement model; (2) descriptive statistics and Pearson correlations among the variables; and (3) results from an evaluation of the structural model using structural equation modeling procedures.

### *Confirmatory Factor Analysis*

Of the 24 survey items used in this study, 23 items were hypothesized to load onto five distinct latent variables (task value, self-efficacy, boredom, frustration, and satisfaction), and one item represented the continuing motivation variable. Regression weights for 18 of the 23 items were freely estimated (one item per factor served as a marker variable). In addition, covariances between the five factors and the continuing motivation variable were freely estimated.

Using AMOS 7.0 (Arbuckle, 2006), correlations among the 24 items were calculated. Listwise deletion of cases with missing data was used for the CFA and all subsequent analyses. There were 471 cases with no missing values on the 24 items used in this study. Table 1 provides a summary of the resulting goodness-of-fit indices for the original five-factor model. Overall, results indicated that the model did not fit the data well (Hu & Bentler, 1999): the chi square was statistically significant,  $\chi^2(238, N = 471) = 898.35, p < .001$ , the chi square/degrees of freedom ratio (3.78) was greater than 3.0, the comparative fit index (CFI; .92) was less than .95, and the root mean square error of approximation (RMSEA; .08) was greater than .06.

Next, in an attempt to improve model fit, standardized residuals and modification indices were examined, and five items were trimmed based on the results. All fit indices improved as a result of these modifications, indicating that the revised model was an adequate fit to the data: the chi square remained statistically significant,  $\chi^2(138, N = 471) = 329.11, p < .001$ , but the chi square/degrees of freedom ratio (2.38) was less than 3.0, the CFI (.97) was greater than .95, and the RMSEA (.05) was less than .06 (see Table 1).

**Table 1**  
*Fit Indices for the Measurement Models Tested in the Confirmatory Factor Analysis*

Model	$\chi^2$	df	$\chi^2 / df$	CFI	RMSEA
Original 5-Factor Model (23 Items)	898.35*	238	3.78	.92	.08
Modified 5-Factor Model (18 Items)	329.11*	138	2.38	.97	.05

Note. CFI = comparative fit index; RMSEA = root-mean-square error of approximation.  
\* $p < .001$ .

### *Descriptive Statistics and Pearson Correlations*

Final subscale statistics are presented in Table 2; internal reliability estimates (Cronbach's  $\alpha$ ) for the subscales were all quite good (Gable & Wolfe, 1993). Table 2 also presents descriptive statistics and results from the correlation analysis. As indicated, task value and self-efficacy were statistically significantly related to each other ( $r = .33, p < .001$ ) and to students' boredom ( $r = -.41$  and  $-.26$ , respectively), frustration ( $r = -.39$  and  $-.28$ , respectively), overall satisfaction ( $r = .65$  and  $.41$ , respectively), and continuing motivation ( $r = .41$  and  $.36$ , respectively). Additionally, boredom and frustration were statistically significantly related to each other ( $r = .58, p < .001$ ) and were negatively related to satisfaction ( $r = -.52$  for both variables) and continuing motivation ( $r = -.46$  and  $-.43$ , respectively). Finally, satisfaction and continuing motivation were positively related to each other ( $r = .59, p < .001$ ).

Overall, these results indicate that when considered individually, students' cognitive appraisals and negative achievement emotions explained from 17 to 42% of the variance in satisfaction and 13 to 21% of the variance in continuing motivation (all moderate to strong effects; Cohen, 1988). Satisfaction explained 35% of the variance in continuing motivation (a strong effect).

**Table 2**  
*Descriptive Statistics, Cronbach's Alphas, and Pearson Correlations for the Measured Variables (N = 471)*

Variable	M	SD	Subscale Items	$\alpha$	1	2	3	4	5	6
1. Task Value	4.87	1.09	5	.88	–	.33	-.41	-.39	.65	.41
2. Self-Efficacy	5.32	1.12	4	.91		–	-.26	-.28	.41	.36
3. Boredom	4.02	1.32	3	.84			–	.58	-.52	-.46
4. Frustration	3.36	1.45	3	.89				–	-.52	-.43
5. Satisfaction	4.77	1.20	3	.92					–	.59
6. Continuing Motivation	3.93	1.17	–	–						–

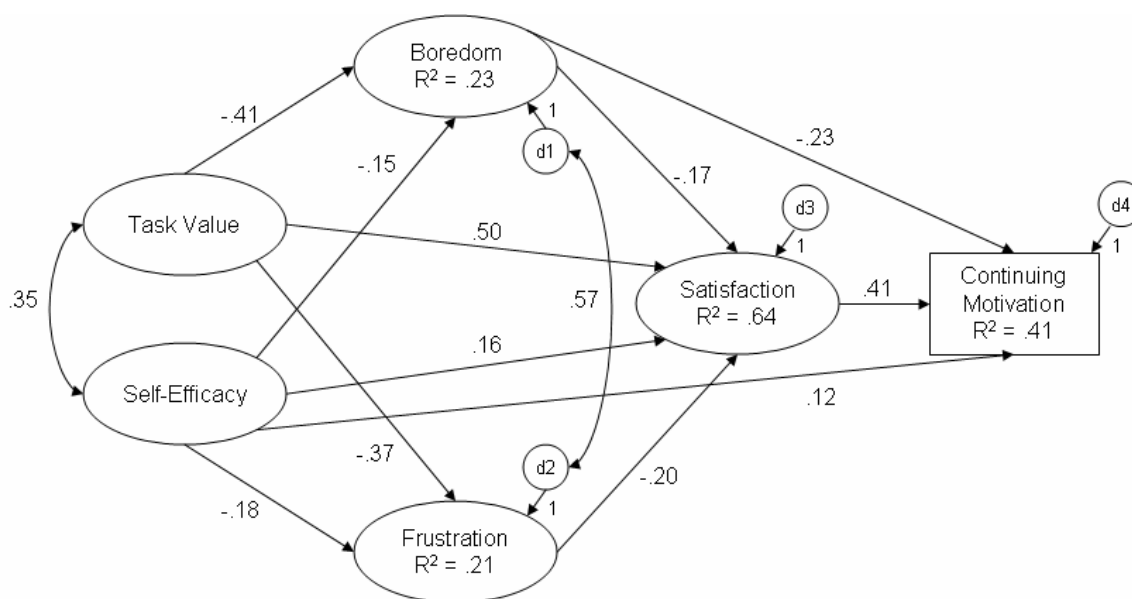
Note. All subscale variables were measured on a 7-point Likert-type agreement scale. Continuing motivation was measured on a 6-point Likert-type response scale ranging from 1 (*definitely will not enroll*) to 6 (*definitely will enroll*). All correlations are significant at the  $p < .001$  level.

### *Evaluating the Structural Equation Model*

The structural model reflecting the hypothesized linear relationships among the five latent constructs and continuing motivation was tested using AMOS 7.0 (Arbuckle, 2006). Overall, the structural model yielded a reasonable fit (Hu & Bentler, 1999): the chi square was statistically significant,  $\chi^2 (140, N = 471) = 332.16, p < .001$ , but the chi square/degrees of freedom ratio (2.37) was less than 3.0, the CFI (.97) was greater than .95, and the RMSEA (.05) was less than .06.

The results of the structural model are summarized in Figure 1. As indicated, all paths depicted in the model were significant at the  $p < .001$  level. In particular, task value was negatively related to boredom ( $\beta = -.41$ ) and frustration ( $\beta = -.37$ ), and positively related to satisfaction ( $\beta = .50$ ). Task value did not have a statistically significant direct effect on continuing motivation. Similarly, but to a lesser degree, self-efficacy was negatively related to boredom ( $\beta = -.15$ ) and frustration ( $\beta = -.18$ ), and positively related to satisfaction ( $\beta = .16$ ). However, in this case, self-efficacy also had a direct effect on continuing motivation ( $\beta = .12$ ). In terms of negative achievement emotions, results confirmed expectations; both boredom and frustration were negative predictors of satisfaction ( $\beta = -.17$  and  $-.20$ , respectively). Furthermore, boredom had a direct negative effect on continuing motivation ( $\beta = -.23$ ), whereas frustration did not.

Table 3 presents a summary of the direct and indirect effects of task value, self-efficacy, boredom, and frustration on satisfaction and continuing motivation. By far, task value had the strongest total effect on satisfaction, followed by self-efficacy, frustration, and then boredom. For continuing motivation, the effects were more evenly distributed among the predictors, with task value having the strongest total effect, followed closely by boredom and self-efficacy. Frustration, on the other hand, had a weak total effect on continuing motivation. Finally, satisfaction had a strong direct effect on continuing motivation. Moreover, as hypothesized, those who reported being more satisfied with their online learning experience also reported that they were more likely to enroll in future online courses.



*Figure 1.* Structural equation model of the linear relationships among students' cognitive appraisals (task value and self-efficacy), negative achievement emotions (boredom and frustration), satisfaction with a self-paced online course, and continuing motivation to enroll in future online courses. Only latent variables, disturbances, and the continuing motivation variable are presented. All paths are significant at the  $p < .001$  level.

The explanatory power of the structural model is also shown in Figure 1. As indicated, task value and self-efficacy accounted for 23% of the variance in boredom and 21% of the variance in frustration (moderate effects). Additionally, students' cognitive appraisals (task value and self-efficacy) and negative achievement emotions (boredom and frustration) accounted for 64% of the variance in their overall satisfaction with the online course (a very strong effect). Finally, the entire model accounted for 41% of the variance in students' continuing motivation to enroll in future online courses (a strong effect).

**Table 3**

*Effects of Cognitive Appraisals (Task Value and Self-Efficacy) and Negative Achievement Emotions (Boredom and Frustration) on Satisfaction ( $R^2 = .64$ ) and Continuing Motivation ( $R^2 = .41$ )*

Construct	Satisfaction			Continuing Motivation		
	Direct Effect	Indirect Effect	Total Effect	Direct Effect	Indirect Effect	Total Effect
Cognitive Appraisals						
Task Value	.50	.14	.64	–	.36	.36
Self-Efficacy	.16	.06	.22	.12	.13	.25
Achievement Emotions						
Boredom	-.17	–	-.17	-.23	-.07	-.30
Frustration	-.20	–	-.20	–	-.08	-.08

*Note.* Effects are reported as standardized regression coefficients. Total effects = direct effects + indirect effects.

## Discussion

Educational psychologists have long known that students who are motivated to learn and who experience positive emotions during learning tend to experience greater academic success (Schunk et al., 2008). Given the practical significance of motivational beliefs (or cognitive appraisals) and achievement emotions, the purpose of the present study was to better understand how task value and self-efficacy are related to students' negative achievement emotions in a self-paced online course, and, moreover, how these beliefs and emotions are associated with students' overall satisfaction and continuing motivation. In doing so, this study addressed the complex interplay among emotion, cognition, and motivation (Linnenbrink & Pintrich, 2004) in the hopes of better appreciating how students "go about learning" in the context of an online course.

Taken together, findings from this study provide support for Pekrun's (2000, 2006) social cognitive, control-value theory. Specifically, when considered alone, task value was negatively correlated with students' boredom and frustration, and positively related to their course satisfaction and continuing motivation. Additionally, results from the structural equation model indicate that task value was a statistically significant negative predictor of boredom and frustration. Moreover, task value had both a direct effect and indirect effect (through boredom and frustration) on students' course satisfaction; whereas task value had only an indirect effect on continuing motivation (through satisfaction). Thus, it appears that students who believed the online course was interesting, important, and useful were less likely to become bored and frustrated, more likely to be satisfied, and more likely to enroll in future online courses. Likewise, self-efficacy for learning online—when considered alone and after parsing out the effects of task value—was negatively related to students' boredom and frustration. Additionally, self-efficacy beliefs had both a direct effect and indirect effect on students' satisfaction and continuing motivation. These findings suggest that students who were confident they could learn the material presented in a self-paced online format were also less likely to become bored and frustrated with those same online materials and more likely to be satisfied with the course as a whole. Moreover, students with stronger self-efficacy beliefs also reported that they were more likely to take future online courses.

### *Educational Implications*

Due to the correlational nature of this study, strong implications for online learning are somewhat difficult to draw. Certainly, additional studies that employ experimental designs are needed to determine if the instructional implications provided below are capable of positively influencing students' self-regulated learning and online success. Nevertheless, results from this study do offer course developers and policy makers with some insight into the thoughts and feelings of online learners. From a practical

standpoint, institutions currently using, or planning to use, online learning may be able to utilize this information to strengthen their students' overall experience with self-paced online learning.

The following preliminary implications are provided:

1. *Promote task value beliefs.* Instructional designers should consider creating online courses that engage students in learning activities that the students perceive as valuable (i.e., interesting, important, and/or useful; Artino, 2007; Artino & Stephens, 2006). For example, integrating course content with authentic, real-world issues can not only capture students' immediate interest but can also help them appreciate the broader relevance and importance of what they are learning (Bransford et al., 2000). As indicated by Artino and Stephens (2007), "activities that tap into students' personal goals, interests, and values are intrinsically interesting and thus can be the gateway to deeper and sustained levels of cognitive engagement and critical thinking" (p. 20). However, instructional designers are cautioned that providing students with interesting but irrelevant content does not necessarily improve understanding and, in some cases, can actually interfere with effective learning (Harp & Mayer, 1998).

2. *Promote self-efficacy for learning online.* Research has shown that students' self-efficacy beliefs can be enhanced in several ways (Schunk & Ertmer, 2000). For instance, prompt scaffolds that guide and encourage students to set challenging, proximal learning goals can be an effective way to (a) direct students' attention to relevant task features, (b) help them select and apply appropriate strategies, and (c) encourage them to compare their current performance with the learning goal (Locke & Latham, 2002; Schunk, 2006). In a self-paced online course, a self-efficacy prompt might consist of a simple cue at the start of each lesson that explicitly identifies the knowledge and skills students are expected to acquire by the end of the lesson. This prompt can then be followed by an assessment later in the lesson that incorporates timely and explicit feedback—yet another proven method for boosting self-efficacy beliefs (Bandura, 1997; Schunk & Ertmer, 2000; Wang & Lin, 2007). Timely and explicit feedback "reveals progress in relation to learning goals and helps students adjust the level or direction of their effort" (Artino & Stephens, 2007, p. 21). Ultimately, proximal learning goals and performance feedback have been shown to encourage self-monitoring and self-evaluation, behaviors that strengthen self-efficacy and sustain motivation (Bandura, 1997; Schunk et al., 2008; Schunk & Zimmerman, 1998).

3. *Address boredom and frustration.* Findings from this study suggest that negative achievement emotions are associated with decreased satisfaction and reduced continuing motivation. In practical terms, implications can be based on the basic assumption that these and other adaptive outcomes will be improved when negative emotions are minimized and positive emotions are maximized (O'Regan, 2003; Pekrun, 2006). Thus, it seems that instructional designers and policy makers would do well to address not only students' task value and self-efficacy beliefs, but also those areas of course design and delivery where negative emotions are likely to be directed: namely, the learning *task* and the *technology* (Wosnitza & Volet, 2005). This could include, for example, ensuring that (a) the technology is reliable, accessible, and usable; (b) instructions for accessing course management systems are clear and explicit; and (c) the course structure provides users with sufficient control and ease-of-navigation (O'Regan, 2003).

## Conclusion

Results from the present investigation support the theoretical perspective of Pekrun and his colleagues (e.g., Pekrun, 2006; Pekrun et al., 2006): namely, that students' cognitive appraisals and achievement emotions are important proximal antecedents of several adaptive academic outcomes. Notwithstanding methodological limitations, these findings support the existing literature on achievement emotions in traditional, classroom-based contexts (Pekrun et al., 2006; Pekrun et al., 2002), and they also offer an important extension of this line of research by illustrating that these processes and their interrelations are equally robust in online learning situations. Moreover, findings from the present study suggest that instructional designers may be able to improve satisfaction and continuing motivation by explicitly addressing the relevance of specific online learning tasks, scaffolding students' attempts to master those activities, and addressing those areas of online courses where negative achievement emotions are likely to be directed.

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