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AUTHOR	Bong, Mimi
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ABSTRACT

This study compared the predictive utility of self-efficacy and task-value beliefs among Korean female college students (N=168). It assessed constructs longitudinally and attempted consolidation of self-efficacy and expectancy-value theories. Self-efficacy perceptions were assessed at varying levels of measurement specificity. Exploratory factor analyses showed self-efficacy items were reliably differentiated into separate factors of a priori specificity. Task-value items were separated into utility and intrinsic value factors. Various self-efficacy factors, except for problem-specific self-efficacy, were positively correlated among themselves and with task-value factors. Path analyses showed that students' midterm scores and enrollment intentions at T1 were better predicted by task-value factors. However, the typically stronger links of self-efficacy to performance and of task-value to intentions were observed with T2 measures. Utility and interest values displayed slightly different relations with other variables, demonstrating the need to distinguish between multiple value components. (Contains 5 tables, 1 figure, and 37 references.) (Author/MKA)

Role of Self-Efficacy and Task-Value in Predicting College Students' Course Performance and Future Enrollment Intentions

Mimi Bong
Ewha Womans University
Seoul, Korea

Abstract

Predictive utility of self-efficacy and task-value beliefs was compared among 168 Korean female college students. The study assessed constructs longitudinally and attempted consolidation of self-efficacy and expectancy-value theories. Self-efficacy perceptions were assessed at varying levels of measurement specificity. Exploratory factor analyses showed self-efficacy items were reliably differentiated into separate factors of a priori specificity. Task-value items were separated into utility and intrinsic value factors. Various self-efficacy factors, except for problem-specific self-efficacy, were positively correlated among themselves and with task-value factors. Path analyses showed that students' midterm scores and enrollment intentions at T1 were better predicted by task-value factors. However, the typically stronger links of self-efficacy to performance and of task-value to intentions were observed with T2 measures. Utility and interest values displayed slightly different relations with other variables, demonstrating the need to distinguish between multiple value components.

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Academic motivation literature has been witnessing recent burgeoning of motivational constructs, all vying for more accurate prediction of students' motivated behavior. Beliefs of self-efficacy and task-value are two such constructs that emerged with strong predictive utility. The present investigation examined the role of these variables in predicting academic performance and future course enrollment intentions of college students. In particular, self-efficacy beliefs were assessed by multiple scales of different measurement specificity along with self-efficacy for self-regulated learning. Relations of these efficacy beliefs among themselves and with other variables were explored.

Brief Overview of Self-Efficacy and Expectancy × Value Research

Self-efficacy refers to one's convictions to successfully execute a course of action required to obtain a desired outcome (Bandura, 1977, 1997). In academic settings, it refers to students' beliefs concerning their capability to perform given academic tasks at designated levels (Schunk, 1991). Evidence convincingly demonstrates the critical role self-efficacy perceptions play in determining one' achievement-related cognition, affect, and action (Pajares, 1996). Students with strong senses of self-efficacy willingly engage in challenging tasks, invest greater effort and persistence, and show superior academic performance than those who lack such confidence (e.g., Bandura & Schunk, 1981; Betz & Hackett, 1981; Lent, Brown, & Larkin, 1986; Pajares & Miller, 1994; Pintrich & De Groot, 1990; Schunk, 1981; Zimmerman, Bandura, & Martinez-Pons, 1992).

The expectancy-value theory posits that achievement strivings such as task choice and persistence are determined by a function of motives, expectancies, and values (Atkinson, 1957, cited in Wigfield & Eccles, 1992). Contemporary expectancy-value theorists, most notably Eccles, Wigfield, and colleagues, have made several important revisions to the Atkinson's original model (Wigfield & Eccles, 1992). Compared with Atkinson's model where expectancies and values are inversely related such that potential success on relatively difficult tasks are judged to hold greater incentive values, the Eccles-Wigfield model tends towards a positive relation between the two. The value construct is further divided into different components such as attainment value (importance), intrinsic value (interest), utility value (usefulness), and cost (e.g., Eccles, Wigfield, Harold, & Blumenfeld, 1993; Meece, Wigfield, & Eccles, 1990; Wigfield, Eccles, Yoon, Harold, Arbreton, Freedman-Doan, & Blumenfeld, 1997). Studies with the expectancy-value paradigm similarly report evidence of the critical role these constructs play in initiating and sustaining students' achievement motivation and action (Berndt & Miller, 1990; Ethington, 1991; Feather, 1988; Meece et al., 1990; Pokay & Blumenfeld, 1990).

Findings reveal two trends that are particularly consequential for the present investigation. First, as Wigfield and Eccles (1992) observed, expectancies emerge as a better predictor of performance, as do values of task choice and intentions. The stronger predictive utility for academic achievement demonstrated by expectancy beliefs is compatible with Pajares and colleagues' reports that self-efficacy perceptions come out consistently as a strong predictor of academic performance, while values fail to relate significantly to performance in the presence of self-efficacy beliefs (Pajares & Miller, 1994; Pajares, Miller, & Johnson, 1999; Pajares & Valiante, 1998). Second, the expectancy construct becomes increasingly analogous to self-efficacy in its operational definition (e.g., Pokay & Blumenfled, 1990; Ethington, 1991). Specifically, expectancies are assessed by asking students how well they expect to perform within specific academic contexts. Although not without important theoretical distinctions, the conceptual and empirical similarities between expectancy and self-efficacy in achievement situations have encouraged at least limited and often implicit coalescence between the two theories (e.g., Meece et al., 1990).

The Present Study

The present investigation examined relative contributions of self-efficacy beliefs and task-value in predicting college students' course achievement and future course enrollment intentions. More specifically, the following research questions were considered: (a) Which motivational construct demonstrates stronger predictive utility for college students' course performance? and (b) Which motivational construct demonstrates stronger predictive utility for future course enrollment intentions? This research thus closely resembles previous studies based on the contemporary expectancy-value paradigm. It is nonetheless unique in its (1) longitudinal assessments of constructs, (2) explicit incorporation of relevant components from both self-efficacy and expectancy-value theories, and perhaps more important, (3) tests of self-efficacy measures with varying levels of specificity.

In assessing self-efficacy beliefs, one should heed to Bandura's (1986) caution that "the optimal level of generality at which self-efficacy is assessed varies depending on what one seeks to predict and the degree of foreknowledge of the situational demands" (p. 49). Pajares and Miller (1995) assessed students' self-efficacy for either solving specific math problems, completing everyday math tasks, or performing in math-related courses. Problem-specific self-efficacy emerged as the strongest predictor of their performance on the same math problems, whereas course-specific self-efficacy did so of their choice of math-related majors. Bong (1997a, 1997b) also reported evidence that self-efficacy may be assessed at different levels of generality and that relations between efficacy beliefs and achievement indexes can be moderated by measurement specificity. In the present study, students' self-efficacy perceptions were assessed at increasingly more specific levels, generating two additional research questions: (c) Are self-efficacy beliefs reliably differentiated into separate factors by their measurement specificity? and (d) Which self-efficacy beliefs demonstrate the strongest predictive utility?

Zimmerman et al. (1992) have proposed another type of self-efficacy belief that differs not only in its specificity but also in its content from other more specific academic self-efficacy judgments. Compared with a typical self-efficacy measure that concerns one's perceived capability to perform in a specific content domain, self-efficacy for self-regulated learning taps students' confidence in utilizing a variety of self-regulatory strategies without the constraint of particular subject matters. Self-efficacy for self-regulated learning has been found to relate indirectly to academic performance through its direct positive link to specific self-efficacy beliefs (Zimmerman et al., 1992). Zimmerman and Martinez-Pons (1988) reported a common underlying factor from their eleven-item self-efficacy for self-regulated learning scale. The present study tested the single-factor structure of this scale and its relations to more specific self-efficacy measures.

Method

Participants

One hundred and sixty-eight undergraduate students from a women's university in Seoul, Korea, participated. Typically, students have to earn scores above 95th (liberal arts and social sciences majors) to 93rd percentiles (natural sciences and engineering majors) on the nation-wide college entrance examination to enter this university. The school requires that students be graded on a curve within each class with a fixed maximum possible percentage of students assigned for each letter grade. Participants were recruited from two classes of the same course titled "instructional method and technology". It was one of the core courses for teaching credentials required by most departments in the School of Education. The course is known to be of average difficulty. Students majoring in educational psychology and educational technology are not allowed to take this course because these departments offer separate and more elaborate courses covering the same topics as part of their own programs. Participants were mostly from the School of Education and were 84.5% sophomore, 11.3% junior, and 4.2% senior at the time of the research.

Measures

Self-efficacy for self-regulated learning. Eleven items on self-efficacy for self-regulated learning reported in Zimmerman et al. (1992) were used. Sample items read "I can finish course assignments by deadlines," "I can study when there are other interesting things to do," "I can concentrate during lectures," and "I can arrange a place where I can study without distractions." Response categories ranged from 1 to 5 with the following verbal descriptors: 1 (not at all true), 3 (somewhat true), and 5 (very true). The same response format was used throughout the survey for consistency except for the problem-specific self-efficacy assessment.

Self-efficacy for academic achievement. Seven items were adapted from both Roeser, Midgley, and Urdan (1996) and Pintrich and De Groot (1990). One item was dropped from the T2 survey by mistake. These items tapped students' perceptions of their capability for successful college learning and academic achievement in general. Sample items read "I'm confident I can master the courses I'm taking this semester," "I believe I can do an excellent job on the problems and tasks assigned for the courses I'm taking this semester," and "I can do a good job on almost all the coursework if I don't give up."

Course-specific self-efficacy. Self-efficacy for academic achievement items were modified to refer to the specific course in which the data were being collected. Sample items read "I'm confident I can master the contents covered in 'instructional method and technology'," "I believe I can do an excellent job on the problems and tasks assigned in 'instructional method and technology'," and "I can do a good job comprehending almost all the materials required in 'instructional method and technology' if I don't give up."

Content-specific self-efficacy. Five items asked about students' confidence in mastering representative contents of the course. Representative contents before midterm were: (a) definitions of instructional technology (IT), (b) domains and subcategories of IT, (c) historical development of IT, (d) theories of learning and instruction, and (e) systematic design and development of instruction. Contents covered after midterm were: (a) attributes of instructional media, (b) planning for the use of instructional media, (c) nonprojected and projected visuals, (d) instructional slides and television, and (e) computer-assisted instruction and multimedia learning. A sample item reads "I'm confident that I can successfully solve problems on the definitions of IT."

Problem-specific self-efficacy. Problems were presented to students for a brief period on a screen through an overhead projector. The duration of exposure was adjusted so that it would be long enough to recognize the types of given problems but too short to attempt their solution (see, e.g., Bandura & Schunk, 1981, for similar procedures). A total of thirty midterm problems were divided into fifteen problem pairs according to their contents. Students were asked to rate their confidence for solving given types of problems on a scale ranging from 0 to 100. The following verbal descriptors were provided: 0 (not confident at all), 40 (maybe), 70 (pretty confident), and 100 (real confident).

Perceived value of the course. There were three questions, each asking about perceived importance, perceived usefulness, and interest in the course (see, e.g., Berndt & Miller, 1990; Meece et al., 1990; Pokay & Blumenfeld, 1990, for similar operationalization of task-value). Items read "I think what I learn in 'instructional method and technology' is important," "I think 'instructional method and technology' is a useful course," and "I find 'instructional method and technology' interesting."

Future course enrollment intentions. Two questions asked about students' intentions for future enrollment in similar or related courses. Items read "I'd like to take courses like 'instructional method and technology' again," and "I'd like to take a related course in 'instructional method and technology' if it's offered next semester."

Performance measures. Students' midterm and final test scores comprised achievement measures. There were thirty questions for midterm and thirty-four questions for final exams. Given the nature of the course and the number of students enrolled, objective questions of various formats (i.e., multiple choice, matching, true-false, and short answers) were prepared. These question formats were fully expected by students taking the current course. Each question was rated 0 (incorrect) or 1 (correct).

Procedures

Data were collected during the spring semester of 1998. There were four data collection points: (1) three weeks before midterm, (2) during midterm, (3) two weeks after midterm, and (4) three weeks before final. During the first data collection, students responded to a survey on perceived value of the course, self-efficacy for self-regulated learning, self-efficacy for academic achievement, self-efficacy for the course, and self-efficacy for representative course contents for the first half of the semester. Problem-specific self-efficacy ratings were obtained in the beginning of the midterm examination session, immediately before students took the actual test. Because problem-specific self-efficacy assessment used identical problems to those of midterm, it was necessary to assess problem-specific self-efficacy in conjunction with test administration.

Two weeks after midterm and upon receiving feedback regarding their midterm performance, students again reported their self-efficacy for academic achievement, self-efficacy for the course, and future enrollment intentions for similar or related courses. The two types of self-efficacy were assessed for the second time at this point because they were believed especially vulnerable to the performance feedback. Students reported perceived value of the course, self-efficacy for self-regulated learning, and self-efficacy for course contents for the second half of the semester before final. Future course enrollment intentions were also solicited for the second time. Because all motivational variables were assessed at two different time points, the first and second assessment of each variable is hereafter referred to as T1 and T2 variables, respectively.

Results

Preliminary Analyses

Exploratory factor analyses (EFAs) were conducted separately for T1 and T2 data first with all forty-nine (T1) and thirty-three (T2) items. Oblimin factor patterns with all

T1 items revealed that six factors explained 59.4% of the total variance. The solution yielded factors that were more or less in a predicted pattern, although not as clear as anticipated. Four of the factors were each defined by perceived value, self-efficacy for self-regulated learning, self-efficacy for academic achievement, and both course- and content-specific self-efficacy items. Problem-specific self-efficacy items assessed at T1 loaded on two factors, one on the definitions and history of IT and the other on learning theories and instructional design. Four of the self-efficacy for self-regulated learning items, one course-specific self-efficacy item, and one problem-specific self-efficacy item had cross-factor loadings greater than those on their predicted factors. The EFA with all T2 variables produced clearly defined self-efficacy for self-regulated learning, content-specific self-efficacy, and task-value factors. Self-efficacy for academic achievement and course-specific self-efficacy items formed a single factor. These four factors together accounted for 57.9% of the variance.

The EFAs conducted separately with conceptually distinct constructs yielded much clearer factor patterns. Items for self-efficacy for self-regulated learning all showed loadings greater than .51 on the same factor at both time points (Mdn = .61 at T1 and .65 at T2), although this single factor was able to account for only 36.9% and 41.6% of the total variance at T1 and T2, respectively. Self-efficacy items were clearly divided according to their levels of measurement. Five T1 factors (i.e., self-efficacy for academic achievement, course-specific self-efficacy, content-specific self-efficacy, and two problem-specific self-efficacy) and three T2 factors emerged. Table 1 presents factor loadings. The T1 and T2 factors accounted for 65.0% and 68.0% of the variance, respectively. The largest factor correlation was .55 (Mdn = .26 at T1 and .43 at T2). This indicates that all self-efficacy factors are reasonably discriminated.

A single factor was able to account for 79.5% and 82.1% of the three task-value item variance at T1 and T2, respectively. Table 2 presents factor loadings. Compared with importance and usefulness variables, the interest variable at both time points was associated with noticeably smaller factor loadings. A two-factor solution was thus imposed to test its relative effectiveness. It accounted for 94.5% and 94.1% of the variance at T1 and T2, respectively. As suspected, clearer differentiation was observed between the intrinsic value and other variables at both time points, although the two factors were substantially correlated. Factor correlations were .64 at T1 and .72 at T2. As will be discussed later, two separate task-value factors, termed utility value (importance and usefulness) and intrinsic value, demonstrated divergence in their predictive usefulness. Table 3 presents descriptive statistics of scales as a result of EFAs.

Zero-Order Correlation Analyses

Before testing predictive links among variables, zero-order correlation analyses were performed to (1) obtain stability coefficients and (2) examine relational patterns among the variables of interest. Correlation coefficients in Table 4 revealed several interesting patterns. First, all correlations between the same T1 and T2 factors ranged above .60, except for midterm and final scores. Given that students received feedback regarding their midterm performance before the second assessment, these coefficients seem somewhat large. They appear to indicate that college students do not alter their motivational beliefs much as a result of a single performance feedback.

Second, self-efficacy perceptions assessed at different levels of specificity all interrelated positively and substantially with each other. More interesting, correlation coefficients between any two self-efficacy measures decreased as difference in their measurement levels increased. Self-efficacy for academic achievement and course-specific self-efficacy demonstrated a particularly strong relationship with correlations of .70 (T1) and .72 (T2), commensurate to their own stability coefficients. Yet, these two constructs' relations with other variables differ in their magnitude, as will later be seen. The two problem-specific self-efficacy factors, one on the definitions and history of IT and the other on learning theories and instructional design, exhibited noticeably reduced relationships with other self-efficacy measures, presumably due to their highly specific nature.

Third, utility value, intrinsic value, future course enrollment intentions, and performance measures all showed stronger relations with self-efficacy beliefs assessed at the course-specific level. This finding is not too surprising, considering that task-value and intention items referred to the same course that course-specific self-efficacy items referred to. In the case of midterm scores, one of the problem-specific self-efficacy factors showed the strongest correlation than other self-efficacy factors. However, magnitude of this relation (.23) is not as strong as expected in light of the fact that problem-specific self-efficacy and midterm performance were assessed with the same set of problems.

Multiple Regression Analyses

Table 5 reports results of multiple regression analyses with students' midterm scores, final scores, and future course enrollment intentions at T1 and T2 as separate dependent variables. Independent variables were self-efficacy for self-regulated learning, course-specific self-efficacy, utility value, and intrinsic value. A decision to include only the course-specific self-efficacy factor from the five T1 and three T2 self-efficacy factors was based on two major reasons. First, all academic self-efficacy factors were highly correlated, posing a threat of potential multicollinearity. Second, because the present investigation attempted to compare relative predictive utility of self-efficacy and task-value, including a self-efficacy measure assessed with the same measurement specificity to task-value seemed most appropriate for minimizing effects from extraneous factors.

Models for midterm scores, $F(4, 104) = 4.32$, $p < .01$, and T1 course enrollment intentions, $F(4, 104) = 12.28$, $p < .001$, were significant. Utility value of the course significantly predicted students' midterm performance, whereas both utility and intrinsic values predicted their intentions for future enrollment. Next two models estimated effects of T1 motivation variables on T2 dependent measures. The model for final scores was not significant, $F(4, 94) = 1.92$, $p > .05$, while that for T2 enrollment intentions proved significant, $F(4, 94) = 14.64$, $p < .001$. Both T1 utility and intrinsic values again predicted T2 enrollment intentions, although this time, intrinsic value displayed a considerably stronger relation. Regressions among T2 variables yielded significant solutions for both final scores, $F(4, 104) = 2.68$, $p < .05$, and enrollment intentions, $F(4, 104) = 26.94$, $p < .001$. Course-specific self-efficacy was the only significant predictor of final performance, the same way intrinsic value was of future enrollment intentions.

Path Analyses

Path analytic techniques allow one to examine the extent to which the current data provide support for the hypothesized model, although we still cannot confirm or disprove the theoretical model (Pedhazur, 1982). They were deemed particularly well-suited for the present investigation because the paths among variables of interest have been studied vigorously in the past and thus could be specified on the basis of previous theoretical and empirical evidence. The a priori path model includes T1 motivation variables and T1 and T2 achievement indexes and future course enrollment intentions. The T2 self-efficacy and task-value variables were not included because (1) the variables did not change much as a function of time or performance feedback and (2) multiple regression analyses showed that predictive relations were of almost identical fashion with T1 and T2 independent variables.

The model postulated a direct predictive link from self-efficacy for self-regulated learning to course-specific self-efficacy and then to students' performance and intentions. Utility and intrinsic values were also related to both performance and intentions. Figure 1 presents standardized coefficients for significant paths in the model. Self-efficacy for self-regulated learning was positively related to course-specific self-efficacy[1]. Course-specific self-efficacy exhibited strong positive relations with both utility and intrinsic values. Utility and intrinsic values were positively correlated with each other. Course-specific self-efficacy showed a marginally significant relation to midterm scores ($p = .05$) but emerged as the strongest predictor of final scores. Utility value predicted midterm scores, whereas both utility and intrinsic values predicted further enrollment intentions at T1. However, only intrinsic, but not utility, value predicted future enrollment intentions assessed at T2.

Discussion

Differentiation Among Self-Efficacy Beliefs by Assessment Specificity

Perhaps the most encouraging results of the present study are the clear differentiation among various self-efficacy measures according to their assessment specificity. Oblique rotation of self-efficacy ratings toward academic achievement, the course, the contents, and the problems yielded five factors, mainly divided along the lines of four a priori measurement levels. Additional division of factors involved problem-specific self-efficacy ratings. Students made distinction between their capabilities for dealing with two characteristically different topics of the course within the same measurement specificity. Bandura (1997) and Pajares (1996) discussed that self-efficacy beliefs can be assessed at varying levels of specificity and that the most appropriate measurement level is the one consistent with tasks and research questions under investigation. The present results provide strong empirical support that students' self-efficacy judgments are reliably differentiated by their levels of specificity.

With few exceptions, correlation coefficients between any two self-efficacy measures decreased as their measurement specificity became increasingly discrepant. Bong (1999) obtained similar results with Korean female high school students across Korean, English, and math. The largest correlations were observed between problem- and task-specific self-efficacy, followed by those between task- and subject-specific self-efficacy. In English and math, problem- and subject-specific factors showed the least correlation. Not only are students able to discriminate between various self-efficacy measures, qualitatively different components may be involved in the makeup of each self-efficacy factor. Deciding whether one is likely to solve a set of particularized problems, gauging one's capability to master representative topics of the course, and calibrating the likelihood that one performs successfully in a specific course or college courses in general may call forth different evaluation schemes. Perceptions based on specific problems appear to differ most from other self-efficacy beliefs because they show considerably reduced relations with other self-efficacy scales as well as with task-value and intention measures. With its strong diagnosticity of the imminent test performance, problem-specific assessment in the present investigation might have evoked distinct reactions from participants.

All self-efficacy scales demonstrated large stability coefficients between the first and second assessments. Because the second assessment took place after students received feedback on their midterm performance, these coefficients appear to indicate that college students' percepts of efficacy are not too malleable. Although slightly less than those of more general self-efficacy beliefs, large stability coefficients were also obtained for course- and content-specific self-efficacy. Because self-efficacy beliefs are known to be most sensitive to individual's own mastery experiences (Bandura, 1977; Zimmerman, 1995), these more specific efficacy beliefs were expected to be considerably less stable. This was not the case. Nevertheless, there was indication that students' self-efficacy beliefs were somewhat modified to become closer in line with their midterm performance. First assessments of self-efficacy for self-regulated learning, self-efficacy for academic achievement, and course-specific self-efficacy failed to relate significantly with midterm scores, whereas second assessments all showed significant relations with midterm scores. Such phenomenon was not observed with content-specific self-efficacy, which dealt with different topics before and after midterm. This provides evidence of validity for self-efficacy scales used in the present research.

One of the problem-specific self-efficacy factors (i.e., the definitions and history of IT) showed the strongest correlation with midterm scores among the multiple contemporaneous self-efficacy measures. Although this is consistent with Pajares's (1996) request for specificity and correspondence, magnitude of this relation was disappointing. In general, relations of various self-efficacy measures with achievement indexes were rather low compared with previous findings (Multon, Brown, & Lent, 1991). Asian and Asian-American students are known to express lower academic self-efficacy beliefs than non-Asians, although they typically demonstrate superior academic performance (e.g., Eaton & Dembo, 1997). Men and women are also known to use a different metric in appraising their own competence (e.g., Lundeberg, Fox, & Puncochar, 1994; Pajares et al., 1999; Puncochar, Fox, Fritz, & Elbedour, 1996). Because the current study involved Asian female students, it is difficult to pinpoint a single factor most responsible for the present results. If culture and gender differences indeed played a significant role, it would more likely reflect combined effects from multiple sources. As evidence of motivational differences between Asian and non-Asian students accumulates (e.g., Eaton & Dembo, 1997; Hamilton, Blumenfeld, Akoh, & Miura, 1989; Holloway, 1988), there is urgent need for comparative research on more specific facets of motivational processes.

Structure of Task-Value Beliefs

Although not hypothesized a priori, the present research yielded some interesting results regarding the structure of task-value. Eccles and Wigfield (1992) suggested that ". . . separate components may differentially predict persistence and choice" but that ". . . the relatively high correlations among these components makes it somewhat difficult to estimate their independent contributions" (p. 304). The present study operationally defined task-value as comprising importance (attainment value), usefulness (utility value), and interest (intrinsic value). A two-factor structure accounted for considerably more variance among the three items than a single-factor solution. The importance and utility variables loaded on the same factor, whereas the interest variables loaded on a separate factor. These two factors were named utility value and intrinsic value, respectively.

Despite their high correlation with each other, the two factors showed different relations to dependent measures. Utility value predicted students' midterm performance and enrollment intentions assessed right after midterm. Intrinsic value was not able to predict performance indexes but was able to predict students' future course enrollment intentions assessed both after midterm and before final. The relation of intrinsic value to intentions became stronger at the second assessment. Because only a single course in instructional technology is required for teaching credentials, taking the current course sufficed most students' course requirements. Therefore, perceived utility value of the course may or may not promote desire to take another course on related topics. On the other hand, students who were intrinsically interested in topics covered in the present course would be more willing to take similar courses in the future. Because the current study used only a single item for each value component, replication is needed with multiple-item scales. Future research should also replicate current findings in different situations and with younger students.

Self-Efficacy and Task-Value as Predictors of Performance and Enrollment Intentions

One of the major aims of the present study was to compare independent contributions of self-efficacy and task-value beliefs on college students' course performance and future enrollment intentions. Results partially replicated previous findings. Various self-efficacy scales, except for problem-specific self-efficacy, were positively related to both utility and intrinsic values. Utility and intrinsic values were positively correlated. Self-efficacy for self-regulated learning linked indirectly to achievement through more specific self-efficacy perceptions. The relative predictive usefulness of self-efficacy for performance and task-value for intentions was evidenced with end-of-semester measures. However, task-values displayed stronger relations with both students' midterm scores and their intentions to take further courses assessed in the middle of the course.

The current investigation ventured merger between two prominent theories in contemporary academic motivation research. In doing so, it was hoped that comparative strengths and weaknesses of each theory as well as potential benefits and difficulties in consolidating the two research traditions would become more transparent. Consonant with both theoretical tenets, results confirmed the need for both self-efficacy and task-value beliefs for fuller understanding of students' motivated behavior. The present investigation also demonstrated the possibility of concurrently incorporating and testing separate predictions from each theory. Differentiation of self-efficacy beliefs by assessment specificity as well as partitioning of task-value beliefs by multiple components were successfully observed within the same study. Although present results need to be replicated and expanded to incorporate other important motivation theories, these illustrate one of many ways with which problems of current academic motivation research could be resolved (Bong, 1996).

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Footnote

[1] Substantive results from the path analysis did not change when problem-specific self-efficacy entered the equation instead of course-specific self-efficacy, except that positive relations between self-efficacy and task-value factors disappeared.

Table 1

Oblimin (Oblique) Factor Patterns for Self-Efficacy Items

	Factors							
	T1					T2		
Item	1	2	3	4	5	1	2	3
Self-Efficacy for Academic Achievement								
1. Can master courses taken this semester	.76					.87		
2. Can master even the hardest course if try	.75					.81		
3. Can do a good job on almost all the coursework if not give up	.85					.49		
4. Can do an excellent job on problems and tasks assigned this semester	.64					.64		
5. Think one has superb learning capabilities	.60					.40		
6. Will be able to learn materials taught in college	.74						.50	
7. Expect to receive a good grade this semester (T1 only)	.50					--		

Table 1 (continued)

	Factors							
	T1					T2		
Items	1	2	3	4	5	1	2	3
Course- specific self-efficacy								
1. Can master contents taught in this course		.69					.87	
2. Can master even the hardest content in this course if try		.74					.76	
3. Think one is a good student in this course		.59					.83	
4. Can do a good job comprehending almost all the materials in this course if not give up		.73					.85	
5. Can do an excellent job on problems and tasks assigned in this course		.64					.90	
6. Think one has superb learning capabilities for this course		.59	.33				.72	
7. Will be able to learn materials taught in this course		.71					.65	
8. Expect to receive a good grade in this course		.52					.44	.36

Table 1 (continued)

Items	Factors							
	T1					T2		
	1	2	3	4	5	1	2	3
Content-specific self-efficacy								
Can do an excellent job on tasks and problems on . . . (T1 /T2)								
1. Definitions of IT /Attributes of instructional media			.70					.88
2. Domains and subcategories of IT /Planning for the use of instructional media			.74					.90
3. Historical development of IT /Non-projected and projected visuals			.71					.85
4. Theories of learning and instruction /Instructional slides and television			.85					.90
5. Systematic design and development of instruction /Computer-assisted instruction and multimedia learning			.75					.85

Table 1 (continued)

Items	Factors							
	T1					T2		
	1	2	3	4	5	1	2	3
Problem-specific self-efficacy								
Actual problem(s) of the following types/contents were presented:								
1. Comparison between 1977 and 1994 definitions of IT				.73				
2. Edgar Dale's Cone of Experience				.52				
3. Subcategories of each domain of IT				.70				
4. Historical development of IT				.68				
5. Characteristics of each domain of IT				.82				
6. Components of computer-based instruction				.66				
7. Comparison between formative and summative evaluation					.56			
8. Theories of learning					.74			
9. Transfer and interference					.60			
10. Advantages of systematic design of instruction				.33	.43			

Table 1 (continued)

	Factors							
	T1					T2		
Items	1	2	3	4	5	1	2	3
11. Setting instructional goals				.37	.59			
12. Types of learned capabilities					.77			
13. Subordinate skills analysis					.87			
14. Setting performance objectives			.32		.68			
15. Instructional strategies					.64			
% variance explained	6.1	35.9	3.8	4.4	14.8	6.3	48.6	13.1

Note. Factor loadings less than .30 were not presented for clarity. Problem-specific self-efficacy was assessed at T1 only. IT = instructional technology.

Table 2

Oblimin (Oblique) Factor Patterns for Task-Value Items

	Factor (1)		Factors (2)			
	T1	T2	T1		T2	
Item			1	2	1	2
1. Think what I learn in this course is important	.86	.84	.96		1.00	
2. Think this is a useful course	.85	.87	.95		.87	
3. Find this course interesting	.68	.75		1.00		.99
% variance explained	79.5	82.1	79.5	15.0	82.1	12.0

Note. Factor loadings less than .30 were not presented for clarity.

Table 3

Means, Standard Deviations, and Standardized Item Alphas for Scales

Scale	T1 M	T1 SD	T1 α	T2 M	T2 SD	T2 α
Self-efficacy for self-regulated learning	3.09	.54	.83	3.12	.53	.86
Self-efficacy for academic achievement	3.27	.66	.90	3.18	.55	.83
Course-specific self-efficacy	3.21	.58	.92	3.12	.63	.92
Content-specific self-efficacy	3.04	.63	.92	3.15	.65	.94
Problem-specific self-efficacy: Definitions and History of IT	73.21	12.55	.83	--	--	--
Problem-specific self-efficacy: Instructional Design	72.88	12.70	.91	--	--	--
Utility value	3.25	.76	.91	3.30	.73	.90
Intrinsic value	2.94	.99	--	3.08	.94	--
Future course enrollment intentions	2.53	.98	.94	2.53	.95	.92
Performance Measures	25.05[a]	2.47	--	29.70[b]	2.93	--

Note. Ns vary from 121 to 159 due to missing data. A response scale for problem-specific self-efficacy ranged from 0 (not confident at all) to 100 (real confident). All other response scales ranged from 1 (not at all true) to 5 (very true).

[a] out of 30 maximum possible. [b] out of 34 maximum possible.

Table 4

Zero-Order Correlation Coefficients Among Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. SRL (T1)	1.00																	
2. SRL (T2)	**.78****	1.00																
3. ASE (T1)	.58**	.51**	1.00															
4. ASE (T2)	.52**	.59**	**.69****	1.00														
5. SUB (T1)	.54**	.51**	.70**	.62**	1.00													
6. SUB (T2)	.37**	.50**	.50**	.72**	**.68****	1.00												
7. TSK (T1)	.52**	.53**	.58**	.47**	.70**	.51**	1.00											
8. TSK (T2)	.45**	.55**	.47**	.55**	.57**	.54**	**.66****	1.00										
9. PRB_A	.23*	.38**	.16	.36**	.25**	.25**	.25**	.29**	1.00									
10. PRB_B	.31**	.35**	.24**	.41**	.42**	.45**	.35**	.46**	.63**	1.00								
11. UTIL (T1)	.27**	.34**	.34**	.26*	.41**	.26**	.32**	.42**	.08	.05	1.00							
12. UTIL (T2)	.36**	.41**	.37**	.37**	.41**	.32**	.29**	.36**	.24*	.23*	**.64****	1.00						
13. ITR (T1)	.37**	.37**	.49**	.36**	.61**	.39**	.45**	.40**	.07	.10	.65**	.55**	1.00					
14. ITR (T2)	.37**	.41**	.37**	.36**	.52**	.44**	.44**	.40**	.17	.17	.65**	.72**	**.68****	1.00				

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Table 4 (continued)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
15. INT (T1)	.24*	.43**	.29**	.36**	.44**	.46**	.31**	.39**	.14	.13	.47**	.51**	.51**	.62**	1.00			
16. INT (T2)	.18	.34**	.20*	.18	.35**	.27**	.27**	.27**	.11	.09	.51**	.58**	.59**	.69**	**.72****	1.00		
17. MID	.11	.18*	-.03	.20*	.13	.29**	.12	.17	.23**	.11	.34**	.23*	.14	.38**	.25**	.34**	1.00	
18. FIN	.14	.14	.04	.10	.24**	.16	.19*	.14	.14	.15	.12	.11	.08	.04	.00	.10	**.34****	1.00

Note. Ns vary due to pairwise deletion of missing data. Boldfaced entries represent stability coefficients. SRL = self-efficacy for self-regulated learning; ASE = self-efficacy for academic achievement; SUB = course-specific self-efficacy; TSK = content-specific self-efficacy; PRB_A = problem-specific self-efficacy (definitions and history of IT); PRB_B = problem-specific self-efficacy (instructional design); UTIL = utility value; ITR = intrinsic value; INT = future course enrollment intentions; MID = midterm; FIN = final.

* $p < .05$. ** $p < .01$.

Table 5

Multiple Regression Results With Midterm Scores, Final Scores, and Future Course Enrollment Intentions as Dependent Variables

	Dependent Variable			
Independent Variable	MID	INT (T1)	FIN	INT (T2)
T1 Model				
SRL	.01	.02	-.03	-.06
SUB	.13	.19	.32*	-.04
UTIL	.43**	.25*	.13	.24*
ITR	-.23	.24*	-.20	.48***
Adjusted R^2	.11	.30	.04	.36
T2 Model				
SRL			-.00	.04
SUB			.28*	-.08
UTIL			.23	.19
ITR			-.26	.58***
Adjusted R^2			.06	.49

Note. SRL = self-efficacy for self-regulated learning; ASE = self-efficacy for academic achievement; SUB = course-specific self-efficacy; TSK = content-specific self-efficacy; PRB_A = problem-specific self-efficacy (definitions and history of IT); PRB_B = problem-specific self-efficacy (instructional design); UTIL = utility value; ITR = intrinsic value; INT = future course enrollment intentions; MID = midterm; FIN = final.

* $p < .05$. ** $p < .01$. *** $p < .001$.

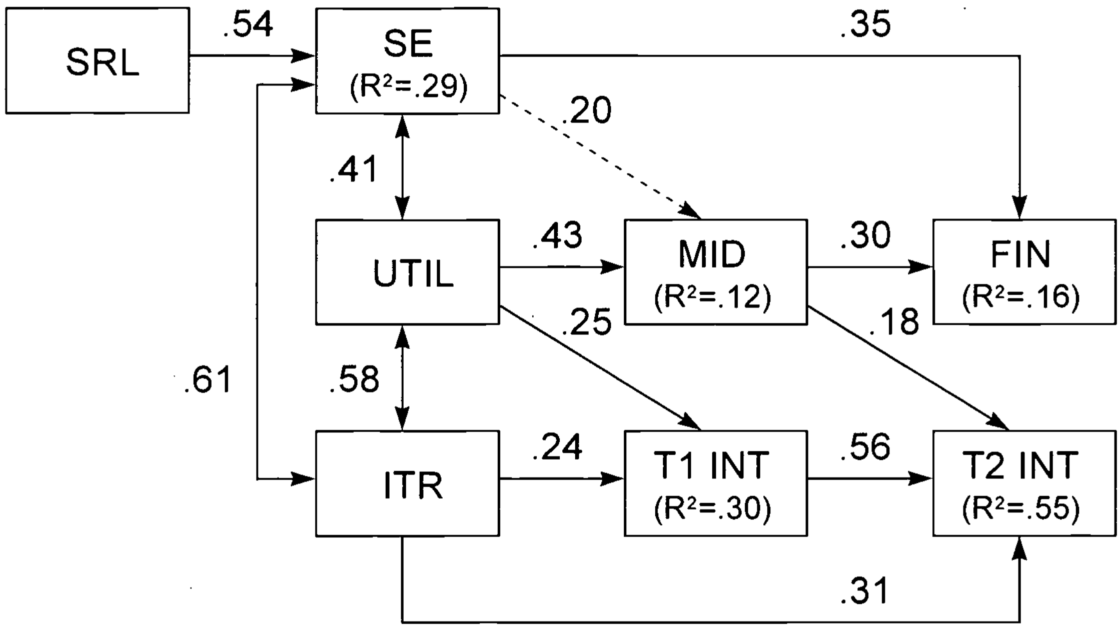

Figure 1. Standardized coefficients for significant paths among variables in the model ($p < .05$; $p = .05$ for the dotted line). SRL = self-efficacy for self-regulated learning; SE = course-specific self-efficacy; UTIL = utility value; ITR = intrinsic value; INT = future course enrollment intentions; MID = midterm; FIN = final.

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