BRIEF RESEARCH REPORT

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

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Predictive utility of self-efficacy and task-value beliefs was compared among 168 Korean female college students. The study assessed the 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 that self-efficacy items were reliably differentiated into separate factors of a priori specificity. These self-efficacy factors were positively correlated among themselves and, with an exception of problem-specific self-efficacy, also with the task-value factor. A correlation coefficient between any two self-efficacy factors tended to decrease, as these factors were associated with increasingly different measurement levels. Path analysis showed that students’ mid-term scores and enrollment intentions at T1 were better predicted by the task-value factor. However, the typically stronger links of self-efficacy to performance and of task value to intentions were observed with T2 variables.

There has been a recent burgeoning of interest in motivational constructs in the academic motivation literature, specifically toward predicting more accurately students’ motivated behavior. Beliefs of self-efficacy and task value are two such constructs that have emerged as having strong predictive utility. The present investigation examined the role of these constructs 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’s 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. Expectancies for success and incentive values refer respectively to the beliefs that certain behaviors will lead to a particular consequence (i.e., success) and the relative desirability of such a consequence (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 toward 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 also 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 demon-
SELF-EFFICACY AND VALUE

strated by expectancy beliefs is compatible with Pajares and colleagues’ reports that self-efficacy perceptions consistently come out 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 & Blumenfeld, 1990; Ethington, 1991). Self-efficacy theorists (Bandura, 1997; Schunk, 1991) distinguished self-efficacy from expectancy beliefs because even when people believe that a set of behaviors will lead to a desirable outcome, they might not act unless they also believe that they can successfully perform those behaviors in question. Although not without important theoretical distinctions, expectancies are being assessed more frequently by asking students how well they expect to perform within specific academic contexts. Such 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 generated: (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 self-efficacy as an expectancy construct, and, perhaps more important, (3) assessments of multiple self-efficacy variables of different specificity. On the basis of previous reports (e.g., Meece et al., 1990; Pajares & Miller, 1994; Wigfield & Eccles, 1992), self-efficacy was hypothesized to predict academic performance better than task value, whereas task value was predicted to come out as a stronger predictor of enrollment intentions.

In measuring self-efficacy beliefs, one should heed 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 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?

METHOD

Participants

A total of 168 undergraduate students from a women’s university in Seoul, Korea, participated. Typically, students have to earn scores above the 95th (for liberal arts and social sciences majors) and 93rd percentiles (for natural sciences and engineering majors) on the nationwide 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 methods and technology.” It was one of the core courses for the teaching credential 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 sophomores (84.5%), juniors (11.3%), and seniors (4.2%) 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. Compared with other self-efficacy measures that concern 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. 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 Roese, Midgley, and Urdan (1996) and Pintrich and De Groot (1990). One item was dropped from the T2 survey by mistake. The 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 methods and technology,’” “I believe I can do an excellent job on the problems and tasks assigned in ‘instructional methods
Content-specific self-efficacy. Five items asked about students’ confidence in mastering representative contents of the course. Representative contents before the 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 the 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 30 midterm problems were divided into 15 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 methods and technology’ is important,” “I think ‘instructional methods and technology’ is a useful course,” and “I find ‘instructional methods 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 course like ‘instructional methods and technology’ again” and “I’d like to take a related course in ‘instructional methods and technology’ if it’s offered next semester.”

Performance measures. Students’ midterm and final test scores comprised achievement measures. There were 30 questions for the midterm and 34 questions for the final exam. 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) 3 weeks before the midterm, (2) during the midterm, (3) 2 weeks after the midterm, and (4) 3 weeks before the 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 at 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 the midterm, it was necessary to assess problem-specific self-efficacy in conjunction with test administration.

Two weeks after the 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 in 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 are hereafter referred to as T1 and T2 variables, respectively.

RESULTS

Preliminary Analyses

Exploratory factor analyses (EFAs) were conducted separately for T1 and T2 data with all 49 (T1) and 33 (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 variables 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 ($\text{Mdn} = .61$ 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 (i.e., self-efficacy for academic achievement, course-specific self-efficacy, and content-specific self-efficacy) 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 ($\text{Mdn} = .26$ 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. Compared with the importance and usefulness variables which doubtless loaded on the same fac-
tor, the interest variable at both time points was associated with noticeably smaller factor loadings. Upon this finding, a two-factor solution was imposed to test its relative effectiveness. It accounted for 94.5 and 94.1% of the variance at T1 and T2, respectively. When these two task-value factors were separated, they demonstrated different predictive usefulness. Nevertheless, a single factor was specified for the purposes of the present investigation because (1) the two task-value factors were highly correlated ($r = .64$ and $.72$ at T1 and T2, respectively), posing a threat of multicollinearity, and (2) the intrinsic value factor consisted of only a single item. Table 2 presents descriptive statistics of the scales.

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 3 revealed several interesting patterns. First, all correlations between the same T1 and T2 factors ranged above .60, except for the one between the midterm and final scores. Given that students received feedback regarding their midterm performance before the second assessment of variables, 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 tended to decrease as difference in their measurement levels increased. Self-efficacy for self-regulated learning, for example, correlated most highly with self-efficacy for academic achievement (average $r = .55$) and least highly with the two problem-specific self-efficacy factors (average $r = .32$). Self-efficacy for academic achievement and course-specific self-efficacy demonstrated a particularly strong relationship to each other with correlations of .70 (T1) and .72 (T2), commensurate to their own stability coefficients. Yet, these two factors’ relations with other variables differed slightly in their magnitude. 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, with regard to various self-efficacy factors’ relations with performance and intentions, none but only one of the self-efficacy factors showed a significant relationship with students’ subsequent academic performance.

1 In general, utility value (perceived usefulness and importance) predicted performance better than interest, whereas interest predicted enrollment intentions better than utility value.
<table>
<thead>
<tr>
<th>Item</th>
<th>Factors</th>
<th>T1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Self-efficacy for academic achievement</strong></td>
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</tr>
<tr>
<td>1. Can master courses taken this semester</td>
<td></td>
<td>.76</td>
<td>.87</td>
</tr>
<tr>
<td>2. Can master even the hardest course if tries</td>
<td></td>
<td>.75</td>
<td>.81</td>
</tr>
<tr>
<td>3. Can do a good job on almost all the coursework if does not give up</td>
<td></td>
<td>.85</td>
<td>.49</td>
</tr>
<tr>
<td>4. Can do an excellent job on problems and tasks assigned this semester</td>
<td></td>
<td>.64</td>
<td>.64</td>
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<tr>
<td>5. Thinks oneself has superb learning capabilities</td>
<td></td>
<td>.60</td>
<td>.40</td>
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<tr>
<td>6. Will be able to learn materials taught in college</td>
<td></td>
<td>.74</td>
<td>.50</td>
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<tr>
<td>7. Expect to receive a good grade this semester (T1 only)</td>
<td></td>
<td>.50</td>
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<tr>
<td><strong>Course-specific self-efficacy</strong></td>
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</tr>
<tr>
<td>1. Can master contents taught in this course</td>
<td></td>
<td>.69</td>
<td>.87</td>
</tr>
<tr>
<td>2. Can master even the hardest content in this course if try</td>
<td></td>
<td>.74</td>
<td>.76</td>
</tr>
<tr>
<td>3. Thinks oneself is a good student in this course</td>
<td></td>
<td>.59</td>
<td>.83</td>
</tr>
<tr>
<td>4. Can do a good job comprehending almost all the materials in this course if does not give up</td>
<td></td>
<td>.73</td>
<td>.85</td>
</tr>
<tr>
<td>5. Can do an excellent job on problems and tasks assigned in this course</td>
<td></td>
<td>.64</td>
<td>.90</td>
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<tr>
<td>6. Thinks oneself has superb learning capabilities for this course</td>
<td></td>
<td>.59</td>
<td>.33</td>
</tr>
<tr>
<td>7. Will be able to learn materials taught in this course</td>
<td></td>
<td>.71</td>
<td>.65</td>
</tr>
<tr>
<td>8. Expects to receive a good grade in this course</td>
<td></td>
<td>.52</td>
<td>.44</td>
</tr>
</tbody>
</table>
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/nonprojected 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

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
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
Means, Standard Deviations, and Standardized Item Alphas for Scales

<table>
<thead>
<tr>
<th>Scale</th>
<th>T1</th>
<th>T2</th>
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</thead>
<tbody>
<tr>
<td>Self-efficacy for self-regulated learning</td>
<td>3.09</td>
<td>3.12</td>
</tr>
<tr>
<td>Self-efficacy for academic achievement</td>
<td>3.27</td>
<td>3.18</td>
</tr>
<tr>
<td>Course-specific self-efficacy</td>
<td>3.21</td>
<td>3.12</td>
</tr>
<tr>
<td>Content-specific self-efficacy</td>
<td>3.04</td>
<td>3.15</td>
</tr>
<tr>
<td>Problem-specific self-efficacy</td>
<td>73.21</td>
<td>3.15</td>
</tr>
<tr>
<td>Definitions and History of IT</td>
<td>72.88</td>
<td>3.15</td>
</tr>
<tr>
<td>Instructional Design</td>
<td></td>
<td></td>
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<tr>
<td>Task value</td>
<td>3.15</td>
<td>3.23</td>
</tr>
<tr>
<td>Future course enrollment intentions</td>
<td>2.53</td>
<td>2.53</td>
</tr>
<tr>
<td>Performance measures</td>
<td>25.05</td>
<td>29.70</td>
</tr>
</tbody>
</table>

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).

The problem-specific self-efficacy factor on the definitions and history of IT correlated positively with students’ midterm scores ($r = .23$). 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. None of the T2 self-efficacy factors were able to relate significantly to students’ final exam scores. Interestingly, course- ($r = .24$) and task-specific self-efficacy ($r = .19$) assessed at the beginning of the semester demonstrated significant relationships with students’ performance on the final. The task-value, enrollment intention, and performance factors 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.

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 the 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 listed variables according to the
### Table 3
Zero-Order Correlation Coefficients Among Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
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<th>13</th>
<th>14</th>
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<th>16</th>
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<tbody>
<tr>
<td>1. SRL (T1)</td>
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<tr>
<td>2. SRL (T2)</td>
<td>.78**</td>
<td>1.00</td>
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<td>3. ASE (T1)</td>
<td>.58**</td>
<td>.51**</td>
<td>1.00</td>
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<tr>
<td>4. ASE (T2)</td>
<td>.52**</td>
<td>.59**</td>
<td>.69**</td>
<td>1.00</td>
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<tr>
<td>5. SUB (T1)</td>
<td>.54**</td>
<td>.51**</td>
<td>.70**</td>
<td>.62**</td>
<td>1.00</td>
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<tr>
<td>6. SUB (T2)</td>
<td>.37**</td>
<td>.50**</td>
<td>.50**</td>
<td>.72**</td>
<td>.68**</td>
<td>1.00</td>
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<td>7. TSK (T1)</td>
<td>.52**</td>
<td>.53**</td>
<td>.58**</td>
<td>.47**</td>
<td>.70**</td>
<td>.51**</td>
<td>1.00</td>
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<tr>
<td>8. TSK (T2)</td>
<td>.45**</td>
<td>.55**</td>
<td>.47**</td>
<td>.55**</td>
<td>.57**</td>
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<tr>
<td>9. PRB-A</td>
<td>.23*</td>
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*Note. Ns vary due to pairwise deletion of missing data. Entries in bold 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); VAL = task value; INT = future course enrollment intentions; MID = midterm; FIN = final.

* p < .05.
** p < .01.
time in the school year in which the measures were administered. Among the multiple self-efficacy factors that differ in specificity, only the course-specific self-efficacy factor was included in the model. Although this procedure may not allow testing the relative predictive usefulness among various self-efficacy variables, it permits comparison of differential predictive utility between self-efficacy and task-value. Given previous reports that magnitude of relations among variables can be moderated by specificity mismatch (e.g., Pajares & Miller, 1995), the self-efficacy variable assessed at the same level of specificity (i.e., course-specific) to the task-value variable was deemed most appropriate.

Figure 1 presents standardized coefficients of the significant paths in the model. Course-specific self-efficacy failed to exhibit a significant relation with midterm scores. Task value, on the other hand, was able to predict both midterm scores ($\beta = .27$) and T1 course enrollment intentions ($\beta = .42$). The T1 course-specific self-efficacy factor predicted T1 future course enrollment intentions ($\beta = .21$). The T1 enrollment intention factor in turn predicted T2 self-efficacy ($\beta = .22$) and value ($\beta = .19$). Students’ midterm performance was not significantly related to either their subsequent course-specific self-efficacy or task value. The differential predictive usefulness of self-efficacy and value was evidenced among the T2 factors. Specifically, the T2 self-efficacy factor assessed after midterm was able to predict students’ performance on the final exam ($\beta = .21$), whereas the T2 value factor predicted the T2 course enrollment intentions ($\beta = .40$). T2 self-efficacy demonstrated a significant negative relationship with T2 enrollment intentions.
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(β = −.18). This finding is puzzling in light of the self-efficacy theorists’ claim that self-efficacy yields a critical influence on subsequent task choice.

DISCUSSION

Differentiation of Self-Efficacy Beliefs by Assessment Specificity

Perhaps the most encouraging result of the present study is the clear differentiation among various self-efficacy factors according to the specificity of measurement. 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 the tasks and research questions under investigation. The present results provide strong empirical evidence that students’ self-efficacy judgments are indeed reliably differentiated by their levels of specificity. Self-efficacy ratings toward 15 problem pairs formed two correlated but separate factors. Although the task-specific self-efficacy items presented essentially the same content as did the problem-specific self-efficacy items, correlations of the two problem-specific self-efficacy factors with the task-specific self-efficacy factor ranged only low to moderate. In a similar vein, task-specific self-efficacy factor, which was composed of students’ self-efficacy ratings toward representative tasks of the course, correlated only modestly with the course-specific self-efficacy factor. Further, correlation coefficients between any two self-efficacy factors decreased as their measurement specificity became increasingly discrepant.

This indicates that not only are students able to discriminate between various self-efficacy measures, they may use different cues and/or apply different evaluation schemes when arriving at each of those perceptions. As a result, self-efficacy perceptions formed at a more general level are not necessarily equal to the sum of more specific beliefs. Qualitatively different components may be involved in the makeup of each self-efficacy factor. In the present research, perceptions formed in reference to specific problems differed most from other self-efficacy beliefs. The literature provides several hypotheses as to why more global perceptions are inconsistent with more specific perceptions in the same domain or how diverse area-specific beliefs may combine to form a general self-system. Without concrete anchors on which to base their judgments, students more likely engage in unrealistic or inaccurate thinking (e.g., Simpson, Licht, Wagner, & Stader). Their judgments may also more likely be influenced by social comparative information (e.g., Bong & Clark, 1999). Depending on how important each task/domain is viewed, perceived competence or incompetence in that task/domain may not contribute much to more global perceptions (e.g., Harter, Whitesell, & Junkin, 1998). It also bears noting that the problem-specific self-efficacy assessment was the most context-specific in nature compared with the other measures in that students were asked to judge their confidence
for solving particular types of problems. The extreme context-specificity of problem-specific self-efficacy might have worked to decrease its relations with other variables.

Only one of the problem-specific self-efficacy factors (i.e., the definitions and history of IT) showed the strongest and significant correlation with midterm scores assessed with the same set of problems. Although this finding is consistent with Pajares’s (1996) request for specificity and correspondence, magnitude of this relationship was disappointing in comparison with previous findings (Multon, Brown, & Lent, 1991). Further, other self-efficacy beliefs showed mostly nonsignificant relations with subsequent performance, which made a systematic test of their relative predictive utility difficult. 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 nonsignificant relations between self-efficacy and performance. 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.

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 witnessed 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 an 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 their 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 the
midterm. This provides some support for the validity of self-efficacy scales used in the present research.

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

One of the major aims of the present study was to compare the 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 factors, except for problem-specific self-efficacy, were positively correlated with task value. Contrary to previous reports (e.g., Meece et al., 1990; Pajares & Miller, 1994; Wigfield & Eccles, 1992), task value, and not self-efficacy, displayed stronger relations with students' midterm scores as well as their intentions to take further courses assessed in the middle of the course. The stronger predictive usefulness of self-efficacy for academic performance and task value for course enrollment intentions typically observed in previous research was evidenced with the end-of-semester variables. However, self-efficacy beliefs assessed after midterm negatively predicted students' course enrollment intentions. In other words, as students felt more self-efficacious toward the course, they reported less willingness to take similar courses in the future. Given that the course in which the data were collected was of average difficulty, college students with a strong sense of efficacy might have perceived it as not challenging enough for them, which might have worked to reduce their intrinsic motivation.

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 results highlighted several issues that should be dealt with more effectively in future research. First, although not hypothesized a priori, the present research yielded interesting results regarding the structure of task value (see footnote 1). 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). In the present study, the importance and utility variables loaded on a single factor, whereas the interest variable showed a tendency to form a separate factor. In exploratory analysis with the two task-value factors, different relations to dependent measures were observed. Utility value predicted students’ performance and en-
rollment intentions assessed right after the midterm. Intrinsic value was not able to predict performance indexes but was able to predict students’ future course enrollment intentions. 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 with multiple-item scales is necessary.

Second, to compare relative usefulness of motivation constructs, it is imperative that they be measured at the same level of specificity to rule out effects from extraneous sources. Moreover, relative predictive superiority of one construct evidenced at a particular assessment level may or may not hold at more general or more specific levels. Task value is typically assessed at a domain level and not at task-specific levels. Following this convention, the present study only assessed students’ value perceptions toward the course and compared them with course-specific self-efficacy beliefs. However, students’ value perceptions may vary, as is the case with self-efficacy, across diverse tasks within the same domain. Research on differentiation of task-value beliefs by the specificity of assessment will add an interesting dimension on the current expectancy-value framework. It will also enable systematic comparison of expectancy and value components’ predictive usefulness at increasingly more specific (general) levels, thus making clearer the psychological processes involved in the initiation and sustenance of motivated behaviors.

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