Self-efficacy and Task Value Motivation of Students Based on Classroom, Instructor and Student Variables[1]

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Abstract

This study sought to descriptively explore the motivation (self-efficacy and task value) of students enrolled in college of agriculture courses. Students (n = 208) were assessed on self-efficacy and task value motivational indicators in relation to classroom, instructor and student variables. Results indicated higher self-efficacy for elective courses, smaller class sizes, courses with female instructors, instructors age 50-59 and female students. Regarding task value, participants indicated higher task value motivation for required courses, class sizes 60-89, courses taught by professors, courses taught by females, instructors age 50-59 and female students. Small and medium effect sizes were observed between group means offering insight as to the magnitude of the observed differences. In all measures of student motivation, female students evidenced higher mean scores. Results generated clues as to the stability and development of self-efficacy and task value motivation in selected college of agriculture students. Further research is recommended giving additional consideration to confounding and extraneous variables, increased sample size, probability sampling and the role of gender and student motivation.

Introduction

As agricultural educators, it is imperative to understand the motivational tendencies of the students enrolled within a college of agriculture. Research examining the motivational beliefs of students enrolled in college of agriculture courses can enable agricultural educators to recognize and improve the success of students and establish a basis for more effective teaching. Furthermore, examining the motivational differences in relation to instructor variables will enable agricultural educators to better shape the learning environment to maximize student motivation.

Expectancy-value motivational theories have shown tremendous opportunities for improving student academic and personal growth (Schunk et al., 2008; Eccles, 2005; Wigfield and Eccles, 2002). Despite the growth in both motivational and educational psychology, there remains very little research directed towards the motivational assessment of students enrolled in colleges of agriculture. This present research is intended to lay a descriptive foundation for the self-efficacy and task value motivation of students enrolled in a college of agriculture.

The theoretical foundation for this research was grounded in the Social Cognitive Theory (self-efficacy) developed by Albert Bandura (1986) and the Expectancy-Value Theory (task value) espoused by Atkinson (1957), Lewin (Weiner, 1992) and Wigfield and Eccles (Eccles, 1983; Wigfield, 1994).

[1]The Ohio State University Institutional Review Board approved the study protocol and all participants provided informed consent prior to participation in the study.

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Self-efficacy

In 1986, Albert Bandura developed the Social Cognitive Theory to highlight his view that motivation was a result of interactive agency, also referred to as triadic reciprocality—a reciprocal relationship based on personal determinants, action and environmental factors (Bandura, 1986). Once Bandura resolved that individuals have and exercise control over their thoughts, feelings and actions, he began developing a theory to address people's beliefs in their own ability to succeed in a task. Bandura conceptualized his ideas as the Theory of Self-Efficacy (Bandura, 1986). Bandura (1986) defined self-efficacy as being, ". . . concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses" (p. 391).

Since its inception in 1986, self-efficacy has been linked to many educational benefits including gains in student achievement and student effort (Bandura, 1997; Zimmerman, 2000), student persistence and skill acquisition (Schunk, 1991) and academic performance and persistence (Multon et al., 1991). Multon et al. (1991) examined 39 different self-efficacy studies and concluded that, *" . . . across various types of student samples, designs and criterion measures, self-efficacy beliefs account for approximately 14% of the variance in students' academic performance and approximately 12% of the variance in their academic persistence"* (p. 34). Zimmerman (2000) highlighted the importance of environmental and situational factors in the determination of self-efficacy beliefs and stated, ". . . *self-efficacy is assumed to be responsive to changes in personal context and outcomes, whether experienced directly, vicariously, verbally, or physiologically*" (p. 88).

Task Value

Very little research has been conducted in agricultural education related to task value. Therefore, there is a need to begin examining the potential implications of students' task value beliefs. Eccles (2005) defined task value as, ". . . a quality of the task that contributes to the increasing or decreasing probability that an individual will select it" (p. 109). According to Eccles (2005) and Wigfield and Eccles (2002), subjective task value can be subdivided into four components: attainment value, intrinsic or interest value, utility value and cost value.

Eccles (2005) defined four major assumptions related to attainment value. First, individuals will view tasks as important when they view engagement in a task as central to their core sense of self. Second, allowing individuals to engage in many tasks, will, over time, establish within the individual a sense of task value corresponding to and strengthened by, their belief of self. The third assumption is that individuals tend to place greater value in tasks that fulfill their self-image and are consistent with their long-range goals. The fourth assumption is that individuals are more likely to accept tasks with high subjective value as opposed to tasks with low subjective value (Eccles, 2005).

Intrinsic or interest value can be defined as simply, ". . . the inherent, immediate enjoyment one gets from engaging in an activity" (Eccles et al., 1983, p.89). Eccles, (2005) likened intrinsic value to Csikszentmihalyi's concept of flow. Intrinsic value results from being immersed in and overcome with, the natural enjoyment of a given activity (Csikszentmihalyi, 1997).

Utility value is ". . . *determined by the importance of the task for some future goal that might itself be somewhat unrelated to the process nature of the task at hand*" (Eccles, 1983, pp.89-90). For instance, a student may place utility value on a specific course, not for the sake of the course, but rather for the sake of the job obtainment possibilities presented by successful graduation.

Identification of the level of student motivation in relation to classroom, instructor and student variables will better enable educators to address and improve the motivation of students as well as provide clarity for future research. Research which clarifies the self-efficacy and task value motivation of college of agriculture students may provide a basis for improving student academic success, facilitating career choice, encouraging career persistence and enhancing the use of both cognitive and metacognitive strategies (Bandura, 1997; McKeachie, 1990; Pintrich and DeGroot, 1990). This present inquiry was intended to provide a descriptive basis on which to begin assessing the self-efficacy and task value of students enrolled in colleges of agriculture.

The purpose of the study was to examine the self-efficacy and task value motivation of students enrolled in two selected college of agriculture courses. The research was guided by three main research objectives:

1. Describe student self-efficacy and task value for learning based on classroom variables.
2. Describe student self-efficacy and task value for learning based on instructor variables.
3. Describe student self-efficacy and task value for learning based on student variables.

Materials and Methods

The target population for this descriptive-exploratory study consisted of college students enrolled in two selected agricultural courses within a large university. A purposive sample was selected and assessed from two of the largest non-major specific agriculture courses offered by the college. According to Ary et al. (2006), a

purposive sample is one in which, ". . . sample elements judged to be typical, or representative, are chosen from the population" (p. 174). The two courses in which the assessment was administered were identified and selected based on class size, accessibility and enrollment of a diverse variety of majors.

The selected courses comprising the purposive sample were perceived to contain a relative mix of freshman, sophomores, juniors and seniors. Both courses were deemed to be most closely representative of the entire college. However, based on the nonprobability method of collection, no attempt was made to generalize the results beyond the respondents (Ary et al. 2006). Data were collected from the two selected courses in which students were asked to assess their personal motivation in the class they had attended immediately previous to the class in which collection occurred. While the data utilized in this study were part of a larger study, the current research focused strictly on the classroom, instructor and student variables relating to student self-efficacy and task value motivation.

Instrumentation

Each student was given the opportunity to complete two assessment instruments: the Self-Efficacy for Learning and Performance and the Task Value portion of the Motivated Strategies for Learning Questionnaire (MSLQ) created by Pintrich et al. (1991, 1993). In addition, participants were asked to provide demographic data pertaining to class rank, student gender, course type, class section, class time, class size, instructor type, instructor gender and instructor age.

The Self-Efficacy for Learning and Performance instrument consisted of eight Likert-type questions similarly scaled from 1 (Not at all true of me) to 7 (Very true of me). Previous Cronbach reliability for the self-efficacy portion of the MSLQ was 0.93 (Duncan and McKeachie, 2005). For the purposes of this research, the scale descriptors (Not at all true of me) and (Very true of me) were modified to read (Strongly disagree) and (Strongly agree). For instance, when answering the question, "I expect to do well in this class," participants were asked to rate their responses on a Likert-type questionnaire scaled from 1 (Strongly disagree) to 7 (Strongly agree). A panel of experts in Agricultural Education, consisting of graduate students and professors, were asked to assess the validity of such a change and all questions with the new scale descriptors were deemed valid. A pilot study with the modified descriptors revealed a Cronbach's reliability coefficient of 0.96 (n = 27). A post hoc Cronbach's reliability analysis was 0.96 (n = 208).

The Task Value measurement chosen for the research was the Task Value component of the Motivated Strategies for Learning Questionnaire (MSLQ). The Task Value measure contained six Likert-type questions scaled from 1 (Not at all true of me) to 7 (Very true of me). Previous administrations of the Task Value segment of the MSLQ yielded a reliability coefficient of 0.90 (Duncan and McKeachie, 2005). For the purposes of this research, the scale descriptors (Not at all true of me) and (Very true of me) were modified to read (Strongly disagree) and (Strongly agree). For instance, when answering the question, "I am very interested in the content area of this course," participants were asked to rate their responses on a Likert-type questionnaire scaled from 1 (Strongly disagree) to 7 (Strongly agree). A panel of experts in Agricultural Education, consisting of graduate students and professors, were asked to assess the validity of such a change and all questions with the new scale descriptors were deemed valid. The MSLQ with the modified scale descriptors was administered to college students and the pilot study (n = 27) revealed a Cronbach's reliability coefficient of 0.83. The post hoc Cronbach's reliability was 0.93 (n = 208).

Data Collection

The target population and subsequent purposive sample consisted of students enrolled in two colleges of agriculture courses. Both courses had a combined enrollment of 250 students. Of the 250 possible respondents, 208 returned useable questionnaires resulting in a sample size of 208. As a result of the nonprobability sampling technique, no efforts were made to generalize the results past the respondents.

The institutional review board protocol for this study prevented the researchers from recording specific student names. As a result, the researchers were unable to take any class roll or attendance measures. Thus, the researchers were only able to report the number of returned questionnaires and, because there were no individual identifiers, calculation of nonresponse rate was difficult. The only conclusions concerning completion rate were based on the course enrollment and those students completing instruments. The enrollment for one course was 105 students, with 85 students returning completed questionnaires, for a response rate of 81%. The enrollment for the second course was 145 students, with 123 completing usable instruments, for a response rate of 85%. No attempt was made to follow up on nonrespondents.

Data Analysis

Data were analyzed using SPSS 17.0 statistical software package. Descriptive data relating to the research objectives were analyzed to further describe student self-efficacy and task value perceptions. Cohen's

d (Cohen, 1988) was also used to measure the effect size of the mean values. Cohen defined effect sizes as small (.20-.50), medium (.50-.80) and large (>.80). Effect sizes were calculated on mean values and those values evidencing a small, medium or large effect size were noted. Confidence intervals were established a priori at 95% and reported throughout the manuscript in conjunction with effect sizes. The data utilized in this research were part of a larger research study.

Results

A demographic overview indicated 208 respondents reported assessing 50 course prefixes. Of the 50 course prefixes, the largest categories were chemistry (n = 23, 11.1 %) and math (n = 20, 9.6%) followed by animal science (n = 15, 7.2%), biology (n = 14, 6.7%) and rural sociology (n = 14, 6.7%). The remaining 45 course categories evidenced a fairly even distribution with no one category accounting for more than 5% of the respondents. The students identified 20.7 % of the classes as elective and 78.4 % as required. In terms of year in school, Freshman (21.6%) Sophomore, (23.6%) Junior (33.7%) and Senior (21.2%) participants displayed a relatively heterogeneous mix representing each year in school.

Objective 1 sought to describe student self-efficacy and task value for learning based on classroom variables. The classroom variables examined included course type, class section, class time and class size.

Students indicated higher self-efficacy for elective courses and lower self-efficacy for required courses (Cohen's d = .46, t(204) = 2.441, p = .015, 95% CI [.10, .99]). The task value for elective courses was slightly lower than the task value for required courses. Class section showed little variation among self-efficacy and task value means and class time yielded slightly higher self-efficacy means for courses taken in the middle of the day and late afternoon. The task value means were relatively stable regardless of class time. Regarding class size, self-efficacy scores were higher for smaller class sizes and decreased as class size increased. The largest self-efficacy mean value difference was between class sizes of 30-59 and 90-119 (Cohen's d = .80, t(54) = 2.553, p = .014, 95% CI [.18, 1.53]). Task value mean scores varied somewhat based on class sizes with students indicating the greatest task value in classes containing 60-89 students and the lowest task value mean in classes containing 90-119 students (Cohen's d = .68, t(42) = 2.088, p = .043, 95% CI [.03, 1.70]). Table 1 identifies the mean self-efficacy and task value scores in relation to classroom variables.

Objective two sought to describe student self-efficacy and task value for learning based on instructor variables. The researchers assessed instructor type, gender and student perceived age.

Table 1. Student Perceived Self-efficacy and Task Value in Relation to Course Type, Class Section, Class Time, and Class Size

		n	Self-Efficacy		Task Value	
			M	SD	M	SD
Course Type	Elective	43	5.52 (1.06)		4.72 (1.34)	
	Required	163	4.96 (1.35)		4.82 (1.51)	
Class Section	Lecture	153	5.10 (1.32)		4.84 (1.48)	
	Laboratory	20	5.19 (1.40)		4.77 (1.61)	
	Recitation	32	4.99 (1.32)		4.84 (1.49)	
Class Time	Early Morning	81	4.96 (1.30)		4.89 (1.39)	
	Middle of the Day	82	5.23 (1.35)		4.84 (1.60)	
	Late Afternoon	34	5.26 (1.17)		4.82 (1.50)	
	Evening	8	4.01 (1.26)		4.40 (.89)	
Class Size	0-29	75	5.06 (1.32)		4.90 (1.49)	
	30-59	38	5.47 (1.19)		4.84 (1.57)	
	60-89	28	5.38 (1.26)		5.21 (1.42)	
	90-119	16	4.61 (.96)		4.35 (1.10)	
	120-149	15	5.02 (1.63)		4.46 (1.72)	
	>150	33	4.66 (1.39)		4.73 (1.47)	

Note. Scale: 1 = strongly disagree to 7 = strongly agree.

Table 2. Student Perceived Self-efficacy and Task Value in Relation to Instructor Type, Gender, and Age

		n	Self-Efficacy		Task Value	
			M	SD	M	SD
Instructor Type	Professor	159	5.10 (1.32)		4.87 (1.46)	
	Graduate Student	46	4.98 (1.30)		4.61 (1.50)	
Instructor Gender	Male	149	5.05 (1.32)		4.77 (1.50)	
	Female	59	5.18 (1.30)		4.99 (1.40)	
Instructor Age	20-29	45	4.99 (1.39)		4.61 (1.50)	
	30-39	42	4.93 (1.40)		4.55 (1.68)	
	40-49	45	5.10 (1.23)		4.61 (1.43)	
	50-59	59	5.27 (1.19)		5.31 (1.18)	
	60-69	14	4.98 (1.72)		5.04 (1.46)	
	70 or more	1	5.75 (--)		2.00 (--)	

Note. Scale: 1 = strongly disagree to 7 = strongly agree.

Student mean values based on instructor type were very similar. The main differences can be seen in that both student self-efficacy and task value were lower for graduate student instructors. Instructor gender evidenced slight mean value differences with students indicating greater self-efficacy and task value in courses taught by female instructors. Instructor age displayed the largest mean value differences for both self-efficacy and task value for instructors between 30-39 and 50-59. Self-efficacy effect sizes, based on instructor age, while non-significant, yielded a Cohen's d = .26 (, t (99) = -1.284, p = .202, 95% CI [-.86, .18]) and task value effect sizes were Cohen's d = .52, (t(99) = -2.694, p = .008, 95% CI [-1.33, -.20]). Table 2 contains the mean values for self-efficacy and task value.

Objective 3 sought to describe student self-efficacy and task value for learning based on student variables of class rank and gender. Self-efficacy mean values increased yearly from freshman to senior standing and the task value means increased through the junior year and then decreased. Gender results varied between male and female with male students reporting lower self-efficacy and task value scores than female students. The task value mean difference between males and females

Table 3. Student Perceived Self-efficacy and Task Value in Relation to Class Rank and Student Gender

		n	Self-Efficacy		Task Value	
			M	SD	M	SD
Class Rank	Freshman	45	4.67 (1.27)		4.74 (1.45)	
	Sophomore	49	5.04 (1.30)		4.87 (.1.41)	
	Junior	70	5.23 (1.26)		4.91 (1.50)	
	Senior	44	5.33 (1.40)		4.74 (1.56)	
Student Gender	Male	132	5.00 (1.42)		4.64 (1.48)	
	Female	76	5.23 (1.09)		5.16 (1.41)	

Note. Scale: 1 = strongly disagree to 7 = strongly agree.

produced a Cohen's d of .36 (t(205) = -2.507, p = .013, 95% CI [-.94, -.11]). Table 3 lists the self-efficacy and task value mean scores.

Discussion

The comparisons between the demographic variables and the respondent mean values of self-efficacy and task value produced several important clues as to the nature of both self-efficacy and task value. Based on class rank, self-efficacy means increased from freshman through senior standing. Freshmen reported a mean value of 4.67 (SD = 1.27) increasing to a senior mean of 5.33 (SD = 1.40) yielding a small effect size of d = .49 (t (87) = -2.298, p = .024, 95% CI [-1.21, -.09]). This observation is in line with the underlying theory and prior research of self-efficacy (Eccles and Midgley, 1989). Namely, students are influenced by mastery experiences, vicarious experiences, verbal persuasion and physiological and affective states (Bandura, 1997). The researchers would also assume that college students may be more sensitive and receptive to mastery experiences offered in college classes and the social aspects of self-efficacy generation. Further, social influence is particularly high during the college years, leading to an increased receptivity toward vicarious experiences. Lastly, college students are in the midst of developing an independent sense of their own physiological and affective moods. Conceivably, the development of physiological and affective states increases during the college years, resulting in an increase in self-efficacy.

The mean values for task value followed a very logical and intuitive pattern. Freshmen increased in task value throughout their junior year and then decreased in task value for their senior year. Seniors often display less task value in certain subjects, a phenomena which some refer to as "senioritis." The task value mean scores support the notion that seniors may tend to lessen the task value of curricular tasks (Eccles et al., 1983).

Class section showed a slightly higher self-efficacy mean for laboratory classes and little to no difference between lecture, laboratory and recitation in relation to task value. The role of class time in respondent self-efficacy revealed increased self-efficacy mean values based on class time through late afternoon classes (= 5.26, SD = 1.17) with a substantial drop in self-efficacy for evening classes (= 4.01, SD = 1.26). It is important to recognize the number of respondents indicating evening classes. Quite possibly, the evening category is not representative of what the results would be with a larger, more diverse sample. Task value appeared relatively unchanged based on class time with a slight decrease in the mean scores for the evening class respondents.

Instructor age mean values varied slightly for self-efficacy and task value determinations. The respondents indicated higher mean scores in both self-efficacy and task value for instructors age 50-59. Further research should be conducted to examine the possible confounding variables which may influence the observed difference. Perhaps class size might be a confounding variable, or there may be some other influencing factors which result in students with instructors in the 50-59 year age category evidencing increased self-efficacy and task value.

The mean values for self-efficacy and task value varied somewhat in relation to student gender. In all measures of student motivation, female students evidenced higher mean scores. Female students were slightly higher in self-efficacy (1 – 2 = .23) and noticeably higher in task value (1 – 2 = .52). The reasons for the difference in female scores remain obscure. Perhaps female students, once they reach certain levels, tend to perceive themselves as more capable, or perhaps they are simply more sensitive to their own self-efficacy. Female students, in this study, value tasks at a greater level than the male students. Once again, the observed differences should be analyzed in conjunction with research pertaining to societal roles as well.

In an effort to further examine the differences between males and females, the researchers split the student gender file and compared self-efficacy and task value means relating to student class rank. Consistently, with but one exception, female students ranging from freshmen to seniors had higher self-efficacy and task value scores. The one exception is senior female students who rated themselves lower on self-efficacy (= 5.17, n = 17, SD = 1.37) than the senior males (= 5.43, n = 27, SD = 1.44). Future research may want to consider examining student self-efficacy and task value motivation in relation to student gender, content area, age, class rank and prior experiences.

Instructor gender showed slight differences in student self-efficacy and task value. Participants reported female instructors had higher mean values for self-efficacy (= 5.18 for females and = 5.05 for males) and task value (= 4.99 for females and = 4.77 for males). Further research should examine the relationship between instructor gender and student motivation.

A basic understanding of the self-efficacy and task value motivation of selected students enrolled in a college of agriculture provides insight into possible motivational trends and encourages further, more detailed examination. Potential confounding variables need to be identified, controlled for and researched. Caution should be applied to the selection or development of appropriate instruments and consideration should be given to the future assessment of a probability sample. Further research needs to examine self-efficacy and task value at multiple academic locations in an effort to detect potential extraneous variables related to geographic location. Hopefully, through systematic analysis, further insight can be gained regarding student motivation. Additional insight will allow educators and researchers to facilitate an optimal learning and motivational environment.

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