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How Ordering of Assignments Can Influence Beliefs About the Self and How These Beliefs Can Impact on Student Class Performance

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*This research examines whether the ordering of the difficulty of exams can influence student beliefs about their academic abilities and the impact of these beliefs on their performance. The ordering of the difficulty of test items has shown to affect performance. Study One (*N = *91) examined college student differences in reaction to a difficult and an easy exam. Results suggest that the ordering of difficulty of exams may influence self-efficacy of students. Study Two (*N = *178) examines whether this self-efficacy (and other beliefs about the self) can impact college student performance on actual exam scores over time. The results of this research suggest that the ordering of difficulty of assignments can affect student's self-efficacy about the class. It finds that the impact on self-efficacy may affect overall performance early in the class but that this impact may not be long lasting. This is due to the positive evidence received later in the course that may contradict initial low performance and give confidence in the student's ability to achieve high performance. The results have implications for segments of the student population that may be disproportionately impacted by self-perceptions such as the first generation student.*

Cette recherche examine dans quelle mesure le classement des examens selon leur difficulté influence les croyances des étudiants par rapport à leurs habiletés académiques d'une part, et l'impact de ces croyances sur leur performance d'autre part. Il a été démontré que le classement des items d'un examen en fonction de leur difficulté a une incidence sur la performance. Étude #1 (n=91) porte sur les différences dans les réactions d'étudiants d'université à un examen difficile et à un examen facile. Les résultats portent à croire que l'ordre de présentation des examens selon leur difficulté peut influencer l'auto-efficacité des étudiants. Étude #2 (n=178) évalue dans quelle mesure cette auto-efficacité (et d'autres croyances relatives à soi) influence, à la longue, la performance aux examens des étudiants universitaires. Les résultats semblent indiquer que la présentation des examens en fonction de leur difficulté peut affecter la perception d'auto-efficacité chez les étudiants et que cet impact peut avoir des incidences sur la performance globale au début du cours mais que celles-ci peuvent être de courte durée. Ce phénomène s'explique par les indications positives qui peuvent venir contredire le faible rendement initial et rehausser la confiance des étudiants en leur capacité de bien réussir. Ces résultats comportent des implications touchant les secteurs de la population estudiantine qui pourraient être affectés de manière disproportionnée par leur image de soi, tels les étudiants de première génération.

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Social cognitive theory and the concept of self-efficacy have been broadly applied across a number of disciplines and contexts to examine the impact of self-perceptions. Self-efficacy refers to the confidence in the belief of an individual regarding his or her capability to perform a particular task. It has been applied to areas as diverse as athletics (Hepler & Feltz, 2012), career development (Betz & Schifano, 2000; Lent, Brown, & Hackett, 1994), and education (Cleary & Zimmerman, 2004; Pollack & Lilly, 2008), amongst many others. Positive self-efficacy toward course material specifically and academics in general is something that college instructors want to spend some time and effort developing in their students. The question is "how?"

College instructors have control over the ordering of the difficulty of exams and assignments in their courses. Some instructors prefer to set the bar high early on in the course so that student expectations are realistic about the time and effort needed to be successful. On the other hand, some instructors ease students into course material by building up the difficulty of course material from easy to more difficult. These differences in the ordering of the difficulty of course material could impact self-efficacy, and consequently influence student performance over time. As such, there are implications that need to be examined.

The purpose of this exploratory study is to look at the influence college instructors have on student beliefs about themselves relating to confidence in the class and to examine the impact of these self-perceptions on performance. Specifically, this study examines the effect of how instructors order the difficulty of their assignments, to raise the issues involved with long-term classroom performance, and to provide a guideline for curriculum design.

This paper builds on literature about ordering-of-question difficulty, which has in general found effects (Canlar & Jackson, 1991) and has focused on the impact of anxiety (Towle & Merrill, 1975). The focus in Study One extends this earlier research in that it looks at how ordering effects of the difficulty of exams or assignments in a class impacts student beliefs about themselves. Study Two then examines how these beliefs about the self, specifically beliefs about self-efficacy and the degree to which intelligence is fixed, impact actual student performance over time in a class.

Ordering of Difficulty of Exams and Assignments

Graded components of a course, hereafter referred to as exams and assignments, can include exams, quizzes, or assignments like projects, papers, and graded homework. One of the advantages of giving difficult exams and assignments early in the semester is that instructors can set appropriate expectations for what is expected over the entire course. *Being tough* can set standards. Difficult exams and assignments are defined in this study as those that require a higher level of thought, effort, and critical thinking than simple exams and assignments. By contrast, giving a first exam or assignment that is relatively easy may set the expectation that the course will be a *gut course*, one that students can pass with relatively little effort. But, "Is being tough on a first exam or assignment always a good choice for college instructors?"

Meta-analysis of the question difficulty literature suggests that students, in general, do better when questions are ordered from easy to difficult compared to when they are difficult to easy or randomly assigned (Aamodt & McShane, 1992). Assignments such as exams and papers can also vary in difficulty. Is it possible that the mere placement of assignments by difficulty in a course can influence the outcome even if the assignments are exactly the same?

Research has suggested that anticipated difficulty of an exam can have a positive effect on future exam performance due to differences in greater effort (Eisenberger, 1992), but it can also

have negative effects on performance on the exam through the mediating effect of the emotion of worry (Hong, 1999) and trait anxiety (Weber & Bizer, 2006). This suggests that the net effect of difficult exams can depend on certain perceptual and emotional reactions of the students. When students react to anticipated test difficulty with high levels of anxiety they perform poorly on their exams (Cassady & Johnson 2002; McDonald, 2001). A lower performance on a difficult first exam or assignment may then depress future performance depending on the extent to which it lowers self-efficacy or motivation.

Motivation is traditionally defined as an internal drive to complete a goal, which in the case of students is their class work (Young, 2005). It can be a problem in higher education, but extrinsic motivation is a problem over which the instructor has some degree of control (Debnath, Tandon, & Pointer, 2007). Such methods as peer evaluation can increase it (Wetsch, 2009). Students are likely to form their impression of a course via the first assignments or exam that they are given. These early experiences shape students' impressions of the goals that the instructor has set for the course. Goals can either be motivating or demotivating to students (Lock & Latham, 2002) depending on how high or low they are set. Based on this, we then pose the question: Can ordering of the difficulty of exams and assignments also impact students' perceptions of their ability?

Self-Efficacy

Self-efficacy has been shown to positively relate to both performance (Gist & Mitchell, 1992) and to satisfaction (Gist, Stevens, & Bavetta, 1991), in addition to being a mediator of critical thinking (Celuch, Kozlenkova, & Black, 2010). Outside of assignments, it has been identified as a positive enabling influence on student choice of courses (Lancelotti & Thomas, 2009). As a result of these positive outcomes, self-efficacy is something that instructors want to develop in their students (Pollack & Lilly, 2008).

Potentially, the strongest influence on self-efficacy is from direct experience of mastery or failure. Instruction, regardless of whether it is face-to-face, internships, or online, has the potential to increase efficacy (Belle & Boote, 2002; Daniels, Mandzuk, Perry, & Moore, 2011). Success in mastery on an exam or assignment may increase self-efficacy but failure may decrease it. Students' self-efficacy toward exams in a class and possibly toward the class as a whole may be negatively affected by a bad experience on an exam or assignment, regardless of other positive instructional experiences.

After completing a first exam or assignment, students will consider how confident they are in their capability to perform well in the course. Ability to successfully master the material in questions on an exam or to apply what is learned in class in a paper should increase their perceptions of self-efficacy. Failure on an assignment will potentially decrease it. If easier assignments are placed up front, students may have a heightened perception of their ability to perform well in the class. This then will allow them to approach the more challenging assignments with a degree of confidence that may help them perform better. On the other hand, if the more difficult assignments are placed first in the course, students may experience lowered confidence in their ability to perform well on the course, a belief that may be reflected in a negative emotional reaction influencing their scores in the class. As a result, the placement of assignments in a course may impact self-efficacy and perhaps performance in the course as a whole. Thus, the first and second research questions for this study are: (1) Can the ordering of exams and assignments by difficulty in a course raise or lower student self-efficacy? (2) Will the

relationship between the ordering of exams and assignments by difficulty impact student emotional reaction?

Other Beliefs About the Self

Students' beliefs about the degree to which intelligence is fixed also relates to how much control they consider they have over their class performance. Dweck (2000) reported competing views about intelligence and achievement. The first view is the theory of fixed intelligence which states that intelligence is a fixed trait and cannot be changed. Students who believe in fixed intelligence typically require a diet of easy successes since challenges are a threat to self-esteem. These students will readily pass up valuable learning opportunities if these opportunities might reveal inadequacies or entail errors, and readily disengage from tasks that pose obstacles (Bandura & Dweck, 1985; Mueller & Dweck, 1998).

On the other hand, the malleable intelligence view sees intelligence not as a fixed trait that an individual is born with, but as something that can be cultivated through one's efforts and learning (Bandura & Dweck, 1985; Dweck & Leggett, 1988). Although individuals holding the view that intelligence is malleable believe there are differences among people regarding how much they know or how quickly they can presently master certain things, they also hold the view that everyone, with effort and guidance, can increase their intellectual abilities.

Impact of Beliefs about the Self on Performance

Why should instructor influence on student beliefs about the self, as discussed in the previous sections, matter? Self-efficacy is a belief about the self that may have an impact on performance outcomes in many types of complex tasks (Quiñones, 1995). More specifically, it has been shown to impact on the academic performance of students (Vancouver & Kendall, 2006). Self-efficacy has also been shown to impact on the way a task is performed, such as the degree of persistence that a student invests in the task (Stock & Cervone, 1990).

This point raises some interesting issues for educators since, as noted previously, the instructor may have considerable influence on students' self-efficacy. Students enter a class with certain beliefs about the self, their self-efficacy, and implicit theories of intelligence, which will influence their performance outcomes and the way they approach the class. But as students become more familiar with these graded components of a particular class, what happens? Thus, the third research question is: (3) Are differences in student beliefs about the self at the beginning of the class potentially influenced by their exam scores over time?

All students do not start off the same in regard to beliefs about the self. Such beliefs may have different effects on the performance of groups that are vulnerable to stereotypes of lower academic performance compared to those that are not (Spencer, Steele, & Quinn, 1999). Perhaps certain groups of students, such as first generation students (those who have no parents or grandparents who went to college), are more vulnerable to how they see themselves or the ordering effects of difficulty of exams than second or third generation students (those who have at least one parent or grandparent who went to college) because they do not have the expectations and role models for success in academia. As a result, instructors may need to put extra thought into locating assessment into curriculum and course design. This issue led to the fourth research question for this paper: (4) Is the relationship between beliefs about the self and exam scores over time the same for 1st generation students and other students?

Study One

We used the assignment of a quiz to assess the effects of perceived order of difficulty on students' self-efficacy about and performance on classroom assignments, examining questions one and two.

Method

Data was collected for this study from one professor's class of a basic marketing course (N = 91) at a large public university in the Southwestern United States. There were 48 females and 43 males in the sample. Out of the total, 79 students were third year and the rest were fourth year. This course is taken after general education requirements have been completed in the first two years. Data was collected in the last half of the semester.

Students were given extra credit to fill out an online survey about taking a quiz. They were assigned randomly to one of two conditions: a *difficult quiz* condition and a *regular quiz* condition. Students in both conditions were given the same extra credit points to complete the survey. Altogether, 48 students in the difficult quiz condition (n = 48) and 43 students in the regular quiz condition (n = 43) filled out the survey.

Participants were given a scenario about taking a quiz. In the difficult condition, the quiz was described as containing "10 tough, long questions." In the easy condition, the quiz was described as comprised of "10 easy, quick questions" so as to keep the quizzes equivalent across the conditions, except for the difficulty level.

After reading about the quiz, students completed a series of measures assessing their thoughts, perceptions, and emotions about it. For all questions, the response options consisted of a seven-point Likert scale anchored by "strongly disagree" (1) and "strongly agree" (7). Averaging the responses to each respective three-item scale derived scores for each of the ten measures. Individual scale items can be found in Appendix A.

Measures that assess self-efficacy and perceptions of instructor performance were used (Swartz, 2006). Measures related to *impact of quiz* loaded cleanly on five factors in a factor analysis performed with oblique rotation. There were measures of the impact on themselves, self-efficacy (with factor loadings of .85 to .91, M = 4.81, α = .90) and motivation-expected effort on the quiz (with factor loadings of .70 to .87, M = 5.21, α= .87). There were also measures of the impact on perceptions of how good the instructor was (with factor loadings of .82 to .89, M = 4.52, α = .92) and on satisfaction with the quiz (with factor loadings of .90 to .93, M = 4.08, α = .88), modified from Ackerman and Gross (2006).

Measures related to *attributions* loaded cleanly on two factors in a factor analysis performed with oblique rotation. We used attribution measures modified from Dixon, Spiro, and Jamil (2001) to measure students' attributions of their performance on an assignment. Three items were used to measure attributions regarding the effect of respondent's ability on performance on the assignment (with factor loadings of .89 to .92, M = 4.78, α = .81) and regarding the effect of chance on performance on the assignment (with factor loadings of .72 to .87, M = 4.25, α = .94).

Measures related to *emotions* were modified items from the emotion inventories of Burke and Edell (1989) and Richins (1997). These items measured "when I think of this assignment I feel..." These items included anxiousness, anger, emptiness, resentment, frustration, anticipation, longing, loss, stress, happy, glad, anxiety, insecurity, regret, pride, and exhilaration. Lastly, the manipulation check, perceived ease of the assignment, was measured by

three items including “This type of assignment sounds easy,” “This type of assignment sounds simple,” and the reverse measured “This type of assignment sounds difficult” (M = 3.68, α = .86).

Results

Results suggest that the difficulty of the quiz does have an impact on self-efficacy perceptions of the course and on emotions elicited. The manipulation was successful, subjects in the difficult quiz condition viewed the quiz as more difficult than those in the regular quiz condition ($F(1, 90) = 74.15$, $M_{\text{difficult}} = 4.31$, $M_{\text{regular}} = 2.90$, $p < .00$, $d = 0.90$). Results of the tests of means are displayed in Table 1.

Students were more satisfied with the regular assignment than the difficult assignment ($F(1, 90) = 24.33$, $M_{\text{difficult}} = 3.95$, $M_{\text{regular}} = 5.48$, $p < .00$). They also felt that the instructor who gave these assignments was a better instructor than the one who gave difficult assignments ($F(1, 90) = 11.23$, $M_{\text{difficult}} = 4.09$, $M_{\text{regular}} = 5.14$, $p < .00$).

On the one hand, self-efficacy for the assignment, the confidence that they could do well on it, was higher for students in the regular assignment condition than in the difficult assignment condition ($F(1, 90) = 9.49$, $M_{\text{difficult}} = 4.46$, $M_{\text{regular}} = 5.18$, $p < .00$). On the other hand, students who faced a difficult assignment expected to put in less effort than those facing a regular assignment ($F(1, 90) = 5.37$, $M_{\text{difficult}} = 5.38$, $M_{\text{regular}} = 6.01$, $p = .02$). Student attribution of their performance on an assignment to ability was lower in the difficult assignment condition than in the regular assignment condition ($F(1, 90) = 5.27$, $M_{\text{difficult}} = 4.11$, $M_{\text{regular}} = 4.80$, $p = .02$), whereas their attribution of their performance on an assignment to chance was higher in the difficult assignment condition than in the regular assignment condition ($F(1, 90) = 9.47$, $M_{\text{difficult}} = 2.60$, $M_{\text{regular}} = 1.76$, $p < .00$). Lastly, in a regression analysis of the attribution and perception measures on the expected effort on the quiz (adj. $R^2 = .44$, $F = 12.97$, $p < .00$), only the regression coefficient for self-efficacy was significant ($b = .41$, $p < .00$).

Many of the negative emotions were higher in the difficult assignment condition than in the regular assignment condition. This included longing $F(1, 90) = 4.42$, $M_{\text{difficult}} = 2.42$, $M_{\text{regular}} = 1.69$, $p = .04$), loss $F(1, 90) = 10.41$, $M_{\text{difficult}} = 2.52$, $M_{\text{regular}} = 1.50$, $p < .00$), emptiness $F(1, 90) = 8.02$, $M_{\text{difficult}} = 2.08$, $M_{\text{regular}} = 1.33$, $p < .01$), resentment $F(1, 90) = 16.39$, $M_{\text{difficult}} = 2.39$, $M_{\text{regular}} = 1.27$, $p < .00$), and the two most deeply felt emotions—frustration $F(1, 90) = 10.46$, $M_{\text{difficult}} = 3.21$, $M_{\text{regular}} = 1.96$, $p < .00$) and stress $F(1, 90) = 17.82$, $M_{\text{difficult}} = 4.21$, $M_{\text{regular}} = 2.50$, $p < .00$.

Table 1

Study 1: Impact of Type of Quiz on Students

Measure	Difficult Quiz	Easy Quiz	F Score
Satisfaction	3.95	5.48	24.33**
Self-Efficacy	4.46	5.18	9.49**
Better Instructor	4.09	5.14	11.23**
Expected Effort	5.38	6.01	5.37*
Attribution to Ability	4.11	4.80	5.27*
Attribution to Chance	2.60	1.76	9.47**

Note. *p < .05. **p < .01.

Discussion

The effect of difficult quizzes on effort is surprising. Students who faced difficult quizzes expected to expend less effort working on them than those who faced the regular quizzes. Students also did not expect to perform as well on difficult quizzes and they dislike instructors who give them. Expending less effort could lead to lower performance on difficult quizzes than would otherwise occur, explaining the negative emotions students feel toward them. The influence of motivation is a likely explanation. Assignments up front in a course that are too difficult may act as an extrinsic de-motivator for students because they set the goal too high from the beginning and therefore can be frustrating (Locke & Latham, 2002).

Some students may also avoid and/or reduce effort, rather than engage in a class in which they feel inadequate to succeed. This is a slight variation of Abraham Lincoln's quote in which he stated, "I know that I am stupid but I am not going to prove it to everybody else by speaking up." In the case of a student, the student believes that s/he is inadequate but s/he is not going to prove it to him or herself by trying and failing. Given the attribution results, students seemed to feel less of a sense of control over their performance when they faced difficult quizzes than when they faced a regular quiz. Greater eliciting of negative emotions, such as frustration and stress, support these findings and are not the type of emotions an instructor wants to elicit from students.

These results do not suggest that an instructor needs to give easy exams and assignments or to *go easy* on students. If quizzes were too easy, then students might set their goals too low and be less motivated to work. There may be an inverted U-shaped relationship between goals set by class exams/assignments and motivation; this would be an interesting direction for a future study.

The results of Study One suggest that direct experience of mastery or failure can have an impact on self-efficacy. An important issue is whether instructors should care about this. Ultimately, what difference do students' self-perceptions about themselves have on their success in academia? Do these differences impact more on first generation students than on others? To explore this question we looked at student exam performance over time in Study Two.

Study Two

Study Two attends to research questions three and four. It assesses the impact of beliefs about the self on exam performance in the classroom over time. It also examines the differences between first generation students and others to see if there are any differences in these relationships between these student groups.

Method

Data was collected for this study from basic marketing classes (N = 178) at a large public university in the Southwestern United States. The participation rate was 100%. There were 88 males and 90 females. In the sample, 140 of the students were third year undergraduates and 38 were fourth year students. Data was collected at three intervals throughout the semester.

Students were given extra credit to fill out an online survey regarding their perceptions of themselves toward the beginning of the semester, before the first exam. Scores were then recorded for each of the students, names kept anonymous, for examinations at three points in

the semester. These exam scores were matched to the perceptions of the students.

For all questions on the online survey, the response options consisted of a seven-point Likert scale anchored by "strongly disagree" (1) and "strongly agree" (7). Averaging the responses to each respective three-item scale derived scores for each of the ten measures. The scale items for these measures are displayed in Appendix B.

There were self-efficacy (Gist & Mitchell, 1992; Gist, Stevens, & Bavetta, 1991) measures for both examinations (with factor loadings of .90 to .91, M = 5.09, α = .85) and for life in general (with factor loadings of .89 to .91, M = 2.97, α = .83). In addition, a one-item measure of belief in fixed intelligence (M = 5.19) was included (Dweck, 2000). Lastly, there was a measure of how well students felt they were doing in the class to determine how well this mapped onto or reflected reality (with factor loadings of .85 to .94, M = 4.28, α = .94).

Results

In answering research question 3, results suggest that personal self-efficacy regarding examinations is very important to student success at first, but that over time other factors negate this advantage. Correlations were done on the student survey measures and the examination scores over time, as displayed in Table 2.

Relationships were tested together in regression analysis of the survey measures on the scores on examination one. In this analysis (adj. $R2$ = .07, $F(1,178)$ = 4.02, p < .01), only the measure for examination self-efficacy was a significant predictor of examination scores (B = .27, p < .01). When in the equation with examination self-efficacy, perceived performance was not a significant predictor of examination scores.

There is a significant positive relationship between examination self-efficacy and examinations one (r = .28, p < .01) and two (r = .21, p < .01). There was no significant relationship between examination self-efficacy and examination three. There was also a significant positive relationship between perceived performance and actual performance on examination one (r = .16, p < .05). There is a significant negative relationship between the degree subject's believe that his or her intelligence cannot be changed and examination one (r = -.20, p < .05). However, there was no significant relationship between this measure and examinations two and three. Similar to self-efficacy, by the third exam this relationship had entirely disappeared.

Students were divided by the median score of 69.2 for all three exams into high and low score groups to see if there would be any differences in perceptions and attributions between the two. Means were significantly different only for exam self-efficacy ($M_{\text{high score}}$ = 5.38, $M_{\text{low score}}$ = 4.80, p < .00). Surprisingly, there were no significant differences in the perceived performance

Table 2

Study 2: Correlations of Survey Measures on Exam Scores

Measure	Exam 1	Exam 2	Exam 3
Exam Self-Efficacy	.28**	.21**	.15
General Self-Efficacy	.00	.03	-.03
Perceived Performance	.16*	-.05	-.05
Belief about Intelligence	-.20*	-.16	.02

Note. *p < .05. **p < .01. N = 91

between the two groups.

Post-test comparison of first generation students and others. To answer the fourth research question, another sample of students (N = 148), separated into 80 first generation and 68 other students, participated in a post-test. This sample was from the same class, at the same university, just a different daytime section. Students in this sample were given the same survey at the beginning of the semester except that they were asked at the end whether or not they were first generation students.

For the first generation student sample, the above results were similar to the main sample in Study Two. Self-efficacy and belief about intelligence were significantly related to the earlier exam scores. A regression of examination self-efficacy on performance on the exams was significant (B = .27, p < .01). The same pattern was found for fixed intelligence (B = -20, p = .04). By contrast, in the other student sample, there were no significant relationships and in fact the overall ANOVA model was not significant either (F(4,64) = 2.15, p = .09). Results of regression analyses found that these differences, the coefficients and overall models, were significant between the first generation and other student samples.

Discussion

The most significant finding is that self-efficacy about examinations does make a difference in actual student performance, but that this effect declines and is perhaps eliminated over time by other factors such as increasing familiarity with class material and confidence. Students started off the marketing course with differing levels of self-efficacy and this impacted their performance on a first or possibly second exam. The correlations were the strongest in the first exam, but still significant in the second exam. As the semester progressed, these differences in performance related to self-efficacy declined, the correlation results in general were not significant.

In the short run, this type of confidence in performing a task can give students an advantage over others who are less confident. This might give those students who take one-time exams, such as college entrance examinations or required minimum standards exams (i.e., writing proficiency examination), a big advantage. Once these students are in the classroom, though, those with less confidence may have the opportunity to catch up. This may suggest that perhaps instructors could give more weight to later assignments than to early ones. It also suggests that perhaps less weight should be given to examinations given once or twice than to student performance in course work over time.

The finding of the mismatch of student perception of performance with actual student performance might be explained with reference to the construct of self-efficacy. It reinforces earlier views on student overconfidence (Koku & Qureshi, 2004). Kennedy, Lawton, and Plumlee, (2002), for example, found a learning effect for underperforming students who overestimated their grades but became better at estimation over time. The results of this study suggest that overconfidence may even help in prediction, though like Kennedy et al. (2002), differences may decrease over time. Perhaps this overconfidence is a self-fulfilling prophecy, which helps them do better on the assignments. When this overconfidence is factored out of the equation, students really do not have a clear idea of how well they are mastering the material in a class.

These findings also suggest that there are self-efficacy differences between first generation students and others; supporting earlier research that reports differences between other

segments of the student population such as gender differences (Shotick & Stephens, 2006). However, more research must be conducted to determine the exact nature of the difference. It is interesting that exam self-efficacy is a significant factor impacting first generation students but not on other students during the first examination. This impact disappears by the second and third exams. Perhaps it suggests some or greater apprehension on the part of first generation students until they experience some familiarity and hopefully some success with the exams. Referring back to the results of Study One, instructors can certainly play a role in helping first generation students through this process. In classes with large numbers of first generation students, they can structure assignments and material in increasing levels of difficulty, helping to build up student self-efficacy regarding the exams and subject before moving onto the more challenging material.

Conclusions and Implications

The results of Study One indicate that college instructors can influence a student's perception of his/her self-efficacy and ability by manipulating the difficulty of a quiz. Student perception of their ability to succeed on an assignment actually has a positive impact on the student's self-efficacy, ability, and motivational efforts to perform assignments. On the other hand, Study Two suggests that early failure or poor performance can be overcome. Consistent with Study One, early successful performance on the initial examinations had a positive influence on examination self-efficacy and perceived performance. However, on the last examination, self-efficacy and perceived performance were not significant factors.

Instructors can best help their students, especially perhaps in a new or particularly challenging subject, by being proactive and helping to build up self-efficacy toward a subject by preparing students for what is coming ahead in the course and building up the difficulty level as the semester progresses. Instructor mentoring of at risk students is another way to help reduce student anxiety and fear as well as build up the proper perspective on studying and course preparation. Instructors could spend a little bit more time helping these students prepare for class, develop study skills or time management strategies. Mentoring could be targeted to those students who are less well prepared or who are otherwise at risk, such as first generation students. These implications are discussed in more detail in the tips for instructors in Appendix C.

These findings have special significance for first generation students. Student confidence is a big barrier for some segments of the student population in universities, especially first generation students (Cushman, 2007), whose parents have not had more than a high school education. These students often come from poverty or working class backgrounds and may have a very different self-conceptualization than other college students (Clarke-Keefe, 2002). First generation students tend not only to have lower levels of confidence, their attrition rates are also higher in college, which is to say they are less likely to graduate once they have started (Ishitani, 2006). This is critical because college study is a more important source of cultural capital for first generation students than for students whose parents have completed a college education (Pascarella, Pierson, Wolniak, & Teranzini, 2004). In fact, research has started to identify educational approaches that can increase the confidence of first generation university students in their ability to control their educational progress (James, Bruch, & Jehangir, 2006).

Similar to the research on gender and self-efficacy (Shotick & Stephens, 2006), this exploratory study suggests that self-efficacy may be an issue for first generation students but

that they will catch up over time. Perhaps in classes or universities with large first generation student populations, instructors can take measures to build up the self-efficacy of students such as providing easier material up front and building up difficulty or weighting later assignments more heavily than earlier ones.

This study is limited in that it was a field experiment. There is no way to control for other factors in the classroom that could impact on the relationships observed in the results. Future research could involve a controlled experiment that could assess the effects of these influencing factors on specific assignments given by the researchers.

Another issue for future research is the difference between exams and other assignments that are less limited by time pressure. For example, perhaps the ordering of difficulty of assignments has more impact on exams than on a research paper since students have time to mediate anxiety-reducing measures when completing a paper. By contrast, taking an exam is a one shot assessment of their ability that perhaps heightens the impact of negative emotions.

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Appendix A: Study One Measures

Satisfaction with Assignment

1. I would be extremely satisfied with this assignment
2. I would really like this assignment
3. I would be really pleased with this assignment

Desirability of the Instructor

1. This sounds like a great instructor
2. This instructor sounds like someone I would like to take
3. It seems as though I would really like this instructor

Expected Effort on the Assignment

1. I would really work hard on this type of assignment
2. I would really put forth the effort needed on this type of assignment
3. I will really put in the necessary time required for this type of assignment

Self-Efficacy for this Type of Assignment

1. My performance on this type of assignment would be great
2. I would do really well on this type of assignment
3. I know I would receive a really high score on this type of assignment

Attribution Regarding Ability

1. My performance on this type of assignment would be due to my ability, nothing else
2. My knowledge and skills would determine my success on this type of assignment, nothing else
3. My success on this type of assignment would be due to my abilities, nothing else

Attribution Regarding Chance

1. My performance on these types of assignment is due to luck
2. Luck is an important part of this quiz
3. My performance on this type of assignment would be due to chance

Appendix B: Study Two Measures

Self-Efficacy for Exams

4. I can find a way to do well on examinations and assignments
5. I can organize information to do well on examinations and assignments
6. Doing well on examinations and assignments is no problem for me

Self-Efficacy in General

1. I am sure of my ability to handle any circumstances
2. I can be effective in any situation
3. No matter what happens, I am confident I will react well

Belief in Fixed Intelligence

You have a degree of intelligence, and you can't really do much to change it

Perceived Performance

1. I am doing really well in this class
2. I am really performing well in this class
3. My performance in this class is great

Appendix C: Tips for Instructors

1. Give students easier assignments first and then work their way up to a difficult final or final project when there are large percentages of first generation students. Perhaps just giving students more opportunities with quizzes or smaller assignments before giving a major assignment may help as well to build up their self-efficacy regarding the course.
2. Prepare students better for what is coming ahead. If these differences in performance due to self -efficacy vanish with time and experience in the classroom then giving students more step-by-step guidance, may help. Such guidance may seem somewhat tedious to students with high self-efficacy, but it may help eliminate the differences that are based on self-efficacy. This may especially be important in classrooms with a preponderance of student groups such as first generation students that are disproportionately affected.
3. Help students keep a perspective on coursework in their lives, reducing anxiety and fear of failure. Keeping coursework in perspective in their lives can go a long way toward student management of their emotions that may impact on self-efficacy and performance.
4. Mentor students. Individual instructors and departments may try to mentor students that have not performed well early on in a course or program. Perhaps helping students, especially first generation students, to learn how to come back after failure will enable them to complete their course of study.