THE RELATIONSHIP BETWEEN GOAL ORIENTATION AND SIMULATION PERFORMANCE WITH ATTITUDE CHANGE AND PERCEIVED LEARNING: A FOLLOW-UP STUDY

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ABSTRACT

This study is a follow-up to further explore the relationship between the students' goal orientation, their success on a simulation exercise, and their perceptions of its value. As with the earlier study, the relationships between financial performance on the simulation and student perceptions of its attractiveness as an educational pedagogy were not significantly moderated by the goal orientation of the student. Limitations and directions for future research are explored.

INTRODUCTION

Simulation users regularly contend that students' financial success in a business simulation influences their attitudes toward the exercise, yet little to no support has been reported in the literature for this relationship (see, for example, Anderson and Lawton, 2006, 2007). Recently, it has been postulated that students' goal orientation moderates the relationship between financial performance and attitudes (Anderson, Lawton, & Wellington, 2008; Gentry, Dickinson, Burns, McGinnis, & Park, 2006, 2007). However, studies by Anderson, et al. (2008) and Anderson and Lawton (2009) found little or no support that students' attitudes toward a management simulation exercise were affected by financial performance on that exercise, nor were those attitudes moderated by the students' goal orientation. Since these findings were contrary to expectations, we extended the investigation to include students from another school and used a different management simulation exercise. This allowed us to test whether Anderson and Lawton's results were artifacts of the management simulation used or the sample of students upon which their data were drawn.

LITERATURE REVIEW

GOAL ORIENTATION

Educational and social psychologists have identified different goal orientations that are related to an individual's implicit theory of ability and task accomplishment (Button, Mathieu, & Zajac, 1996; Dweck, 1990; Dweck & Leggett, 1988; Elliott & Dweck, 1988). Research in this field shows that learning and performance goal orientations have an impact on how one approaches learning. Individuals with a performance goal orientation focus on demonstrating proficiency and receiving positive evaluations from others. They believe that ability is static and unchangeable. This contrasts with individuals with a learning goal orientation who focus on increasing personal competence by learning new skills. They believe their competencies can be developed and improved (Bell & Kozlowski, 2002, Dweck, 1990). These goal orientations are independent constructs, which allows an individual to possess both the performance goal and learning goal orientation simultaneously (Button, et al., 1996).

GOAL ORIENTATIONS AND ACADEMIC MOTIVATION

Researchers have actively explored the effect of goal orientation on motivation in an academic environment (Archer, 1994; Barron & Harackiewicz, 2003; Bouffard, Vezeau, & Bordeleau, 1998; Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002a; Roebken, 2007). Support has been presented that students' achievement goals play an important role in shaping academic interest, which can affect the approach a student takes to coursework (Dweck & Leggett, 1988). For example, students with performance goals focus on demonstrating competence relative to their peers (Diener and Dweck, 1978, 1980). This contrasts with

students with a mastery (i.e., learning) goal where the focus is to acquire new knowledge and skills (Dweck, 1990).

There have been mixed results on the relationship between these goal orientations and attitude toward a course. For example, Bouffard, Boisvert, Vezeau, & Larouche (1995) found no support for a relationship between mastery goals and attitudes toward a course. However, later research found mastery goals *predicted* interest in a class, (Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997) and also *resulted from* initial interest in a course which lead to increased effort to learn more about the discipline (Harackiewicz, Barron, Tauer, Carter, & Elliot, 2002b).

Separate from the effect on attitudes, is the question of the relationship between these goal orientations and academic performance. Roebken (2007) recently reported that both mastery and performance goals are needed to facilitate satisfaction and academic achievement. However, it is unclear how each of the two goals affects performance (Pintrich, 2000). Research has not resolved the issue of what the performance outcome will be if the person is either performance oriented, or learning oriented, or both.

GOAL ORIENTATIONS AND PERFORMANCE ON BUSINESS SIMULATIONS

Dweck (1990) contends that delayed success and uncertainty is more threatening for students who are performance-oriented than for those who are learning-oriented. Given the complexity of most simulations, participants are forced to confront uncertainty and often find early success is illusive (Gentry & Burns 1997). The very nature of simulations would seem to pose an obstacle to engagement for performance-oriented students and suggests that the student's goal orientation would be an important moderator in influencing the student's attitudes toward the simulation and would affect his or her level of performance. (Anderson, et al., 2008; Gentry, et al., 2006, 2007).

Seijts, Latham, Tasa, & Latham (2004) provide evidence that goal orientation may be linked to performance on a business simulation. They assessed performance for three groups of students given one of three goals: a performance goal, a vague "do your best" goal, or a learning goal. They found that students who were asked to accomplish a learning goal outcome significantly outperformed the "performance" and "vague goal outcome" groups. They also reported that the "performance goal" group did not significantly outperform the "vague goal group." This finding was counter to prior research on goal setting and motivation where people with specific, difficult goals outperformed those instructed to "do their best" (Seijts et al 2004).

While the results reported by Seijts et al. (2004) provide some insights on the relationship between goal orientation and performance on a simulation exercise, they are mitigated by the following. First, the simulation outcome measure (the dependent variable) they used was market share. A financial performance outcome measure related to profits would have been a more accepted measure of performance on a simulation exercise. Second, a particular goal orientation was assigned to the students. There was no attempt to determine whether the assigned goal fit with the students' actual orientation. It is quite likely that some students with a performance-goal orientation were assigned to pursue a learning-goal orientation, and vice-versa. While the effect of this arbitrary assignment is unknown, it is almost certain to have diluted the relationship between goal orientation and performance on the simulation exercise. Finally, there was no reported assessment of the students' reaction to the goal assigned and their consequent performance on the simulation exercise.

Gentry, Dickinson, Burns, McGinnis, and Park (2006, 2007) question whether performance-oriented students are able to manage the nearly inevitable negative feedback that comes with game participation. They contend that performance-oriented students will be handicapped by their preoccupation with their initial poor performance. As a result, they will adopt a narrow focus on the mechanics of the simulation rather than embrace a broader focus on the learning opportunities that the simulation presents. Consequently, they will be less able to respond to the constantly changing tactics of their competitors. While Gentry et al. acknowledged that their conclusions were complicated by sample size and the instrument used to assess goal orientations, they were able to present preliminary evidence that learning-oriented students responded better to negative results on a simulation exercise than did students with a performance goal orientation.

Anderson, Lawton, & Wellington (2008), assessed the relationship between performance on a marketing simulation and students' change in attitude toward the simulation exercise and their perceived learning on the exercise. While they found positive relationships between these variables, the magnitude of the change was small. Further, they found no support for the hypotheses that students' goal orientation moderated these relationships. Anderson & Lawton (2009) replicated this study, but used a management simulation instead of a marketing simulation. Their results were similar to those of Anderson, et al, (2008). These results run counter to those found by Seijts et al (2004) and Gentry et al (2006, 2007).

PURPOSE OF THE STUDY

The purpose of this study was to extend the study by Anderson & Lawton (2009) using students studying the same subject (strategic management) at two different schools and using two different management simulations. Given the contradictory results described above, this design will provide added insight into whether students' goal orientation acts as a moderator of their perception of the value of business simulations as an educational tool.

This study explored the relationship between: 1) performance on a simulation exercise; 2) a student's goal orientation; and 3) students' attitudes toward the exercise.

As noted above, students can be simultaneously both performance-oriented and learning-oriented (Pintrich, 2000). Our hypotheses for this study, therefore, did not posit the results for performance goal oriented versus learning goal oriented students. Rather, they assessed the results for each goal orientation independently.

The hypotheses for this study were:

H1: For students with a high Performance Goal orientation there will be a positive correlation between performance on the simulation and changes in students' attitudes toward the simulation experience.

H2: For students with a high Learning Goal orientation there will be little or no correlation between performance on the simulation and changes in students' attitudes toward the simulation experience.

H3: For students with a high Performance Goal orientation there will be a positive correlation between performance on the simulation and changes in students' perception of how much they learned from the simulation experience.

H4: For students with a high Learning Goal orientation there will be little or no correlation between performance on the simulation and changes in students' perception of how much they learned from the simulation experience.

RESEARCH METHODOLOGY

The Subjects of the Study

Subjects for the study were drawn from students enrolled in a senior-level-strategy course at two Midwestern universities. Forty-six were in two course sections at a medium-sized, private university and 104 were in three course sections at a medium-sized, public university.

The course is a required capstone course for business majors at both universities. All sections were taught during the Spring 2007 semester using a combination of lecture, case discussion, and the simulation exercise. The majority of the students were traditional, college-aged students. A total of 128 students (44 from the private university and 84 from the public university) completed all parts of the study yielding an overall 85% usable response rate (96% for the private university and 81% for the public university).

The Simulation

Two different simulations were used in the study; *Threshold Competitor* (Anderson, et al., 2004) at the private university and *Micromatic* (Scott, et al., 2006) at the public university. Both simulations are total enterprise, business strategy simulations. *Threshold Competitor* requires students to make approximately 35 decisions and *Micromatic* approximately 75 decisions. The decisions involve elements of the marketing mix (e.g., establishing price, quality, and promotion levels), marketing research, (e.g., purchasing information on competitors' pricing and advertising), operations (investing in workforce training, setting production levels) and finance (borrowing short-term and long-term funds, managing cash flow) for each period of play. Each decision period represents three-months (i.e., one quarter).

Both simulations have a Team version (in which student-managed companies compete against other student-managed companies) and a Solo version (in which one student-managed company competes against computer-

Table 1
Study Scales

Scale Name	Description of Items	Number of Items	Cronbach's alpha***		
			Pri*	Pub*	Com*
Attitude	a. I'm really excited about participating in the simulation*	8	.911	.927	.928
	b. I think that participating in the simulation will be very worthwhile*		.938	.935	.946
	c. I think that what I will learn from the simulation will be important for me to know*				
	d. I'm really looking forward to learning more about the simulation*				
	Six semantic differential scales. *The simulation was…*				
	▪ unpleasant 1 2 3 4 5 6 7 enjoyable				
	▪ dreadful 1 2 3 4 5 6 7 engaging				
	▪ dull 1 2 3 4 5 6 7 stimulating				
	▪ simplistic 1 2 3 4 5 6 7 challenging				
	Excluded from analysis to improve Cronbach's alpha				
	▪ frustrating 1 2 3 4 5 6 7 satisfying				
	▪ overwhelming 1 2 3 4 5 6 7 manageable				

* Pri = Private university, Pub = public university, Com = Combined sample

** The scale for these four items is 1= strongly disagree to 7= strongly agree.

*** Note: there are two values of Cronbach's alpha for each of the scales shown above, because the questionnaire was administered on two separate occasions – before the simulation began and after its completion.

managed companies, rather than against other student-managed companies). Only the Team version was used for this research.

Study Design

Students at the private university were assigned to 12 companies operating in two industries, each industry with six companies and four students per company. Students at the public university were assigned to 31 companies operating in three industries, two with 10 companies and one with 11 companies. Each of these companies had either three or four students.

At the private university the simulation was played for 12 decision rounds, at the public university for 16. At both universities, financial performance on the simulation exercise constituted twenty percent of the student's course grade.

Since the study design included two universities, two instructors, and two different simulations, we are in a stronger position to assess whether students' goal orientation moderates the relationship between performance on a simulation and changes in student perceptions of its attractiveness as an educational pedagogy.

Assessment Measures

Four measures were used in this study. They were (1) performance on the simulation, (2) student attitudes toward the simulation, (3) student perceptions of how much they learned from participating in the simulation, and (4) student goal orientation (performance orientation versus learning orientation). The measures for attitude and perception were taken before the start of the simulation and just following its completion. Goal orientation was measured at the start of the simulation.

Simulation Performance Measure. Performance on the simulation was assessed using the Game-to-Date total points score (GTD Points) which ranges from a minimum of -100 points to a maximum of 100 points and is generated by the simulation. This score reflects the relative performance of each company *within* an industry based on their performance on factors such as sales revenue, net income, and return on assets. In order to adjust for differences *between* industries, z-scores were calculated for all companies' GTD Points score within each industry (industry-by-industry). This normalized the GTD Points and allowed the aggregation of individual industry data into one pool for assessment.

Student Attitudes Toward the Simulation Measures. Ten items were used to measure student attitudes toward the simulation. Factor analysis was conducted and two items were excluded from the scale. The remaining eight items had a high level of internal consistency as measured by Cronbach's alpha. This was true for both times that the students' attitudes were assessed (before and after the simulation exercise) and for the two university samples when analyzed separately. Table 1 shows the items and Cronbach's alphas for the attitude measure. The table also shows that the high level of internal consistency was maintained for each sub-sample (private university and public university), reflecting the stability of the attitude measure.

Student Perceptions of Learning Measure. The learning measure was assessed using a single item question. Students indicated their perception of how much they learned from participating in the simulation on a 7-point scale from "Nothing" to "An extreme amount".

Goal Orientation Measure. The student goal orientation measure was assessed using a 25-item questionnaire. Twenty of the items were taken from Button, Mathieu, and Zajac (1996, p. 33) and five additional items were added by the authors. The instrument was designed to

Table 2
Goal Orientation

Performance Oriented	Learning Oriented: Bottom 3rd	Learning Oriented: Middle 3rd	Learning Oriented: Top 3rd
Bottom 3rd	19 (15%)	15 (12%)	7 (5%)
Middle 3rd	10 (8%)	16 (13%)	14 (11%)
Top 3rd	13 (10%)	12 (9%)	22 (17%)

Table 3
Goal Orientation

Performance Oriented	Learning Oriented: Bottom 3rd		Learning Oriented: Middle 3rd		Learning Oriented: Top 3rd	
	Private	Public	Private	Public	Private	Public
Bottom 3rd	3 (7%)	16 (19%)	6 (14%)	9 (11%)	5 (11%)	2 (2%)
Middle 3rd	1 (2%)	9 (11%)	7 (16%)	9 (11%)	13 (30%)	1 (1%)
Top 3rd	2 (4%)	11 (13%)	2 (4%)	10 (12%)	5 (11%)	17 (20%)

measure the students' goal orientation towards tasks in general, not a specific task. Eleven of the 25 items in the questionnaire were designed to measure Learning Goal Orientation and 14 to measure Performance Goal Orientation.

Factor analysis was conducted on the scale items for the two goal orientations. Because a person's goal orientation is a measure of psychological type, the factor analysis was performed on these items using the combined private and public university samples. Following the factor analysis, several items were dropped from the list. In the analysis that follows, there were seven items for Learning Goal Orientation and eight items for Performance Goal Orientation. The Cronbach's alphas were .789 for the Learning Goal items and .832 for the Performance Goal items.

Goal Orientation

Because students can pursue simultaneously both performance goals and learning goals, we assessed the extent to which this occurred in the current study. Student goal orientation results were segmented roughly into thirds for each orientation. Table 2 shows the results of this analysis. Of the 128 students who completed the study, 22 (17.2%) were in the top one-third for both their performance goal orientation and learning goal orientation. This contrasts with 7 (5.5%) who were singular in their *learning* goal orientation (i.e., top one-third in learning goal orientation and bottom one-third in performance goal orientation) and 13 (10.2%) who were singular in their *performance* goal orientation (i.e., top one-third in performance goal orientation and bottom one-third in learning goal orientation).

Table 3 shows the distribution of the private and public university samples by their goal orientation, using the same breakpoints for determining top and bottom one-third categorization as those used in Table 2. The results show that the public university had a larger proportion of students than the private university who were both performance and learning oriented (20% vs. 11%) or singular in their performance orientation (13% vs. 4%). By contrast, the private university had a larger proportion of students than the public university who were singular in their learning orientation (11% vs. 2%).

Rather large differences were found between the goal orientations of students at the two universities. Fifty-two percent of all students at the private university (23 of 44) were in the top one-third for learning goal orientation. This compares to 24% (20 of 84) for students at the public university. For performance goal orientation, 20% (9 of 44) for students at the private university were in the top one-third, compared to 45% (38 of 84) at the public university.

RESULTS

Goal Orientation and Initial Attitudes.

Table 4 shows the relationships between goal orientation and initial attitude toward the simulation exercise. The results show a significant relationship between performance goal orientation and attitude toward the simulation before beginning the exercise. This is true both for the private university and public university samples and for the two samples combined. However, while all three of these relationships were statistically significant, they explained little of the variation in initial attitudes (The adjusted R-squared values ranged from 8.0% to 14.1%).

Table 4 also shows a significant relationship between learning goal orientation and initial attitude toward the simulation exercise for the combined sample. The adjusted R-square of 26% indicates a reasonably strong relationship between these two variables. While a significant relationship exists for the private university between a learning goal orientation and initial attitude toward the

Table 4
Goal Orientation and *Initial* Attitude

	p-value	Adjusted R-Sq
Performance Goal Oriented (n = 128)	.001	8.0%
▪ Private (n = 44)	.007	14.1%
▪ Public (n = 84)	.004	8.4%
Learning Goal Oriented (n = 128)	.000	26.0%
▪ Private (n = 44)	.009	13.1%
▪ Public (n = 84)	.000	23.2%

Table 5
Goal Orientation and *Expected* Learning

	p-value	Adjusted R-Sq
Performance Goal Oriented (n = 128)	.010	4.4%
▪ Private (n = 44)	.019	10.3%
▪ Public (n = 84)	.046	3.6%
Learning Goal Oriented (n = 128)	.000	10.4%
▪ Private (n = 44)	.572	0.0%
▪ Public (n = 84)	.002	10.4%

simulation, the small adjusted R-square indicates that little is explained by this relationship. This contrasts with the public university sample where a moderately strong relationship was found (adjusted R-square = 23.2%).

Goal Orientation and Expected Learning.

Table 5 shows the relationships between goal orientation and the students' expectations for learning by participating in the simulation exercise. As with the results for initial attitudes shown in Table 4, the results show a significant relationship between performance goal orientation and students' expectations for learning before beginning the exercise. This is true both for the private university and public university samples separately as well as for the combined samples. But, as with the relationship with initial attitudes, little of the difference in the students' expectations for learning is explained by the students' performance goal orientation. (Adjusted R-square values ranged from 4.4% to 10.3%).

Table 5 also shows the relationship between learning goal orientation and students' expectations for learning on the simulation exercise for the combined sample and the public university as significant, but again explained relatively little. There was not a significant relationship between these two factors for the private university sample.

Goal Orientation, Simulation Performance, and Attitude Change.

Table 6 shows the results of our analysis to assess the relationship between goal orientation, simulation performance, and attitudes. We performed this analysis by using the change in student attitudes from the beginning to the end of the simulation exercise. When conducting the analysis for the performance goal and learning goal orientations, we used all of the students who were in the top one-third for that classification. For example, in Table 6, the performance goal oriented sample includes students in the bottom, middle, and top one-third classifications for learning goal oriented, not just those who were in the bottom one-third classification.

As shown in Table 6, across the entire sample, there was a statistically significant relationship between change in attitude toward the simulation exercise and performance on the exercise ($p = .003$). The change was in the expected direction – the better the performance, the greater the improvement in attitude from the beginning to the end of the exercise. However, the magnitude of the change was very small; performance explained only 6% of the variation in attitude change.

Next, we repeated this analysis for the two sub-samples. Interestingly, the results show that the significant relationship for the combined sample was driven by the results for the public university sample. There was a significant relationship between change in attitude toward the simulation exercise and performance on the exercise for the public university sample ($p = .001$).

*There should be 42 students in both the performance and learning goal groups (1/3 of 128), but as a consequence of tie scores, the actual numbers were 47 and 43 respectively.

Hypothesis 1. To test Hypothesis 1 (changes in the attitudes of students with a high Performance Goal orientation will be positively correlated with performance), we analyzed the attitude change and performance of those who scored in the top one-third on performance goal orientation. There was no statistically significant relationship between performance on the simulation exercise and change in attitude for the total sample ($p = .238$) nor for either the private university or the public university samples ($p = .811$ and .114, respectively). Consequently, Hypothesis 1 was not supported.

Hypothesis 2. To test Hypothesis 2 (there will be little or no relationship between performance and changes in attitudes toward the simulation for students with a high Learning Goal orientation), we analyzed the attitude change and performance of those who scored in the top one-third on learning goal orientation. For the combined sample, there was a statistically significant relationship between performance on the simulation exercise and the change in attitude ($p = .035$). However, little of the change in attitudes was explained by the students' orientation toward learning (adjusted R-sq = 8.2%).

Testing Hypothesis 2 separately for the private and public university samples yielded somewhat different

Table 6
Simulation Performance and Attitude Change

	p-value	Adjusted R-Sq
All students (n = 128)	.003	6.0%
▪ Private (n = 44)	.546	0.0%
▪ Public (n = 84)	.001	11.6%
Performance Goal Oriented – Top 1/3 (n = 47*)	.238	0.9%
▪ Private (n = 9)	.811	0.0%
▪ Public (n = 38)	.114	4.2%
Learning Goal Oriented – Top 1/3 (n = 43*)	.035	8.2%
▪ Private (n = 23)	.514	0.0%
▪ Public (n = 20)	.055	14.5%

results. There was no significant relationship for the private university sample (p = .514), but there was a marginally significant relationship for the public university sample (p = .055). However, as with the combined sample, the orientation towards learning did not explain much of the attitude change that occurred (Adjusted R-sq = 14.5%).

These results for Hypothesis 2 are mixed. The private university results are consistent with the expectations of little or no correlation between a learning goal orientation and attitude toward the simulation; the public university results, on the other hand, run contrary to this hypothesis. Although the relationship is weak, a statistically significant correlation was found between performance and attitude change for those with a learning goal orientation. Still when the results are viewed as a whole, this study shows little support for students' goal orientation explaining changes in students' attitudes toward a simulation exercise.

Goal Orientation, Simulation Performance, and Perceived Learning.

Table 7 shows the results of our analysis to assess the relationship between goal orientation, simulation performance, and perceived learning. We conducted this analysis using the change between how much students expected to learn when they began the simulation exercise and how much they reported that they learned at the end of the exercise. As with the analysis of attitude change, we used all of the students who were in the top one-third for the learning classification when conducting the analysis for the performance goal and learning goal orientations.

Table 7 shows a significant relationship between change in perceived learning from participating in the simulation exercise and performance on the exercise across the entire sample (p = .044). Although the change was in the expected direction (the better the performance, the greater the perceived learning in the exercise) the relationship was very weak (adjusted R-sq = 2.4%).

However, as with attitude change, results from the analysis of the private and public university-samples shows that the significant relationship found for the combined sample was driven by the results for the public university sample. There was significant relationship between change in perceived learning on the simulation exercise and performance on the exercise for the public university sample (p = .011).

*There should be 42 students in both the performance and learning goal groups (1/3 of 128), but as a consequence of tie scores, the actual numbers were 47 and 43 respectively.

Hypothesis 3. To test Hypothesis 3 (the perceived learning of students with a high Performance Goal orientation will be positively correlated with performance), we analyzed the change in perceived learning and performance of those who scored in the top one-third on performance goal orientation. There was no statistically significant relationship between performance on the simulation exercise and change in attitude for the total sample (p = .418) or for either the private university or the public university samples (p = .418 and .214, respectively). Consequently, there is no support for Hypothesis 3.

Hypothesis 4. To test Hypothesis (there will be little or no relationship between performance and the perceived learning in the simulation for students with a high Learning Goal orientation), we analyzed the change in perceived learning and performance of those who scored in the top one-third on learning goal orientation. As with the "high" performance goal oriented students, there was no statistically significant relationship between performance on the simulation exercise and change in perceived learning for the total sample (p = .257) or for either the private university or the public university samples (p = .778 and .179, respectively). These results are consistent with Hypothesis 4.

DISCUSSION

The results from this study provide very little support that goal orientation influences the relationship between performance on a business simulation exercise and attitudes toward the exercise (Hypotheses 1 and 2). We found no significant relationships between simulation performance and attitudes on any of the measures taken for the students in the private university sample. We did find a significant relationship between simulation performance and attitudes for students in the public university sample for all students

Table 7
Simulation Performance and Perceived Learning

	p-value	Adjusted R-Sq
All students (n = 128)	.044	2.4%
▪ Private (n = 44)	.885	0.0%
▪ Public (n = 84)	.011	6.5%
Performance Goal Oriented – Top 1/3 (n = 47 *)	.418	0.0%
▪ Private (n = 9)	.418	0.0%
▪ Public (n = 38)	.214	1.6%
Learning Goal Oriented – Top 1/3 (n = 43 *)	.257	0.8%
▪ Private (n = 23)	.778	0.0%
▪ Public (n = 20)	.179	4.8%

and also for those with a Learning Goal Orientation. However, in both cases the goal orientation explained little of the change in attitudes.

This study's results show no support for a relationship between goal orientation, performance on a business simulation exercise, and perceived learning on the exercise (Hypotheses 3 and 4). This was true for both the private and the public university samples. We found no support that either a Learning Goal Orientation or a Performance Goal Orientation influenced students' simulation performance or their perceptions of learning.

This study found no reason for simulation users to modify their application of the pedagogy to allow for differing student goal orientations. The only significant relationship we found was for a learning goal orientation and the performance/learning relationship, but the explanatory power of the learning goal was minimal. When viewed in conjunction with the results reported by Anderson, et.al. (2008) and Anderson & Lawton (2009), we conclude that learning goals have little relevance for business simulations. While students' goal orientations may be relevant for other course activities and objectives, they do not appear to influence student perceptions of simulations.

LIMITATIONS

The principal limitation of the study is that student learning was measured based on student perceptions. Perceptions, of course, do not always equate with reality. However, measuring learning at the higher levels of Bloom's Taxonomy (Bloom, B. S., Englehart, N. D., Furst, E. J., Hill, W., & Krathwohl, D. R., 1956) -- the focus of most simulation exercises -- has proven particularly elusive (Anderson & Lawton, 1997; Feinstein & Cannon, 2002).

This study's methodology did not attempt to measure other variables that might have acted as enablers or barriers to financial performance on the simulation exercise. Klein, Noe and Wang (2006, p. 671) identify environmental conditions that can facilitate and impede motivation to learn which, in turn, impacts performance. Incorporating other factors, such as those we discuss below, may explain the relationship between financial performance on a simulation exercise and student attitudes and learning.

CONCLUSIONS

The lack of support for the moderating influence of students' goal orientation on simulation performance and changes in student perceptions of its attractiveness as an educational pedagogy were not totally unexpected. Although convincing arguments have been advanced as to why learning goal orientation should be relevant, prior research by Anderson, et.al. (2008) and Anderson & Lawton (2009) found results similar to the present study. It appears that factors other than goal orientation play the primary role in determining students' views of simulation exercises. Klein, Noe & Wang, (2006 p. 672) argue that time constraints, learner-instructor relationships, technology concerns, information, and availability of support affect the motivation to learn. Perhaps these factors play a moderating role in students' perceptions of a simulation exercise. Looking at the results of Anderson, et al. (2008), Anderson and Lawton (2009), and the current study, we observe that goal orientation was a non-factor for three different simulations, three different instructors, and three different universities. It seems unlikely that further research on the role played by students' goal orientation in their perception of business simulations will yield fruitful insights.

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