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ABSTRACT

The Academic Motivation Profile (AMP) was successfully developed and tested in education classes as a theoretically based tool for measuring students' attitudes about a course. The underlying theory for the AMP comes from Keller's ARCS Model that uses attention, relevance, confidence, and satisfaction from academic motivation theory to effectively design academic instruction (Keller et al., 1978). The suitability of the AMP in business classes is evaluated in this study. In addition, the results of AMP scores from students enrolled in different sections of the same course are evaluated as called for by Pearson and Carey (1995). This study indicates that the AMP applies equally well in the business classes studied as it does in the education classes previously studied.

Keywords

Motivation, student attitudes, attention, relevance, confidence, satisfaction.

INTRODUCTION

Academic achievement, motivation, and student evaluations are frequent topics in education. Many variables influence academic achievement, such as cognitive factors, achievement orientations (Licht and Dweck, 1984), achievement goals (Elliot and Dweck, 1988), academic self-concept (Reynolds, 1988), and motivational orientation (Hagberg, 1992). Educators agree that student motivation is important however there exist little research describing motivational curriculum development.

Prior researcher draws on several motivational theories in the study of academic motivation. The theory of self-determination involves the role of self-determined and controlled behavior in academic performance (Deci et al., 1991, Deci and Ryan, 1985). This theory postulates that behavior is either intrinsically motivated or extrinsically motivated. Expectancy-value theory postulates the relationship between values, expectations, and effort (Vroom, 1964).

Keller used principles from academic motivation theory to develop the ARCS (**a**ttention, **r**elevance, **c**onfidence, and **s**atisfaction) Model of Motivational Design (Keller, 1983, Keller, 1987b). The ARCS Model is a useful framework for motivational instructional design (Small, 2000), and is the theoretical base for the Academic Motivation Profile (AMP) developed to assess students' end-of-course attitudes, focusing on motivation (Carey et al., 2001, Pearson and Carey, 1995).

The AMP was tested successfully with undergraduate education students enrolled in education classes; however, the AMP may not have been tested in business classes. Using the AMP to measure student motivation may be useful in the development and evaluation of business classes. The purpose of this study is to evaluate the applicability of AMP for use in business classes, and to examine the AMP scores of students enrolled in different sections of the same course as suggested in previous research (Pearson and Carey, 1995).

BACKGROUND

Motivation research includes several theories such as behavioral theory, self-determination theory, expectancy-value theory, and attribution theory. Early motivation research (Atkinson, 1957) employed behavioral theories including deprivation, reinforcement, and failure avoidance. Expectancy-value theory (Porter and Lawler, 1968, Vroom, 1964) postulates that

fundamental principles are required to evoke "effort." These principles are that 1) the person must value the task, and that 2) the person must believe he or she can succeed at the task (self-efficacy). Self-determination theory postulates about the roles of self-determined and controlled behavior in academic performance (Deci et al., 1991, Deci and Ryan, 1985). This theory suggests that behavior is motivated either intrinsically or extrinsically. Intrinsically motivated behaviors are driven by the satisfaction and pleasure one receives from engaging in certain activities (Vallerand and Bissonnette, 1992). Extrinsically motivated behaviors are performed in response to something apart from the task itself, such as reward or recognition (Deci et al., 1991).

Attribution theory provides a framework for understanding the reasons people give for their academic successes or failures such as luck, effort, or ability (Graham, 1997). Keller incorporates principles from attribution theory, attention, relevance, confidence, and satisfaction, into the ARCS Model of academic motivation (Keller, 1987a, Keller, 1987b, Keller, 1987c). As conceived by Keller, academic motivation is complex and multidimensional; therefore, to assess students' levels of academic motivation information must be collected for each dimension.

Attention

Attention is the extent to which different aspects of a course arouse and maintain a student's interest and curiosity. The theoretical base for attention includes theories of information processing related to human learning and memory, including curiosity, arousal, and sensation seeking (Berlyne, 1965, Zuckerman, 1971).

Relevance

Relevance is the perceived value of the course for fulfilling a student's current and future goals. Related theories include hierarchy of needs and self-actualization. Students who perceive course outcomes as relevant to their personal needs and professional futures are more likely to attend class and to put effort into a course.

Confidence

Confidence is the student's level of self-assurance in their ability to succeed. The theoretical base for confidence includes elements from locus of control, self-efficacy theory (Bandura, 1977), attribution theory (Weiner and Kluwe, 1987), and expectancy of success (Porter and Lawler, 1968, Vroom, 1964). A student's overconfidence or lack of confidence can also affect learning. Students who believe that new skills are totally beyond their capability will not persevere and master the new skill, while students who believe they already know all they need to know will not put forth the effort required to master the new skill. Students who are challenged and believe they can succeed learn most readily.

Satisfaction

Satisfaction is the degree of personal gratification a student derives from a course. The theoretical base for this dimension includes feedback, reinforcement, self worth, and social context. Students are more likely to sustain learning activities when they believe the resulting new capabilities will increase their personal value and provide them more skills to offer others.

The introduction of the ARCS Model in the 1980's led to the development of several instruments for assessing the motivational quality of instructional situations (Small, 2000). The ARCS Model is the theoretical base for the development of the Academic Motivation Profile (AMP) to assess college students' perceptions of higher education courses in accordance with the ARCS Model (Pearson and Carey, 1995, Carey et al., 2001). The AMP includes all four dimensions: 1) attention to the instructional aspects of the course, 2) relevance of instruction and learning outcomes for personal and professional needs, 3) confidence in performing course learning outcomes, and 4) personal satisfaction with the learning experience.

The AMP instrument has been tested in educational psychology, social foundations of education, and curriculum education classes. The AMP consistently displayed strong internal consistency reliability (Cronbach's Alpha > .94), and the four ARCS dimensions consistently yield high internal consistency (Cronbach's Alpha 0.83 – 0.94) (Carey et al., 2001, Dedrick et al., 1995, Pearson and Carey, 1995). In the current study, the AMP is tested in multiple undergraduate business classes comparing the AMP scores of students enrolled in different sections of the same course to determine whether different instructors yield different student motivation levels as suggested in a previous study (Pearson and Carey, 1995).

Motivation and academic achievement are not expected to be related (Keller et al., 1978, Dunkin, 1986); however, consistent with previous studies of AMP, the correlation of motivation and academic achievement are considered in this study to provide additional evidence of the applicability of AMP in business. Previous studies investigated instrument validity by correlating AMP results with course achievement. The Pearson product moment correlation coefficient comparing AMP scores with academic achievement was 0.30 in the previous study and is typical of attitude to achievement comparisons

(Carey et al., 2001). The Pearson correlation for this study is .352. These correlations demonstrate that the AMP measures a characteristic distinct from that of course achievement.

METHODOLOGY

Sample

The purpose of the study is to determine the utility of the AMP for detecting group motivation differences in business classes; accordingly, the study included 336 students enrolled in seven undergraduate business classes at a large southeastern university. Table 1 provides a detail of student characteristics. There were more male students than female students; the top three majors represented in the sample were undeclared and non-business, accounting, and other business. The study included five instructors teaching seven courses. One instructor taught two sections of the same course, two different instructors taught two different sections of the same course, and the remaining three courses were different courses with different instructors. Based on a review of the syllabi, all the instructors employed similar teaching methods, and the same textbook was used in the common courses. The business classes were selected because of large enrollments of students from various business disciplines.

Major	N	Percent
Other Business	151	44.7
Undeclared and non-business	109	32.8
Accounting	76	22.5
Total	336	100%
Gender		
Male	198	58.9
Female	138	41.1
Total	336	100%
Age		
19-22	261	77.7
23-30	66	19.6
Over 30	9	2.7
Total	336	100%
Ethnic		
Caucasian	283	84.3
Black, Non-Hispanic	21	6.2
Hispanic, Indian, Asian, Hawaiian	17	5.0
Multi-Ethnic	8	2.4
Unspecified	7	2.1
Total	336	100%

Table 1 Student Sample

Instrumentation

The AMP consists of four dimensions that measure student's perceptions of attention, relevance, confidence, and satisfaction in relation to a specific course. The instrument was developed and tested in undergraduate education classes to evaluate college courses (Carey et al., 2001, Pearson and Carey, 1995).

The AMP must be tailored to fit the course. Each of the four dimensions is divided into three parts with three questions each. The parts in the attention section include text/computer materials, class presentations, and participation during class. The relevance section includes relevance to course work, transition from college to career, and as a professional. The confidence section includes course terminology (design/development was used in education), tools used in decision-making (analyze/evaluate progress was used in education), and communication. The satisfaction section includes the student's perception of their participation, personal development, and professional affiliation. The specific questions in each section must be tailored to course material used in the course under study. The development of the original instrument used education majors enrolled in educational instruction courses involving student evaluation methodology. Student evaluation was the primary task identified throughout the AMP in the previous study. This study uses finance and accounting classes because the subjects are so closely related. Based on a review of the textbooks and syllabi used for the classes included in the study, the common tasks related to decision-making using financial information; therefore, financial decision-making was the common task used to tailor the AMP.

The attention factor comprises human characteristics such as the orienting reflex (Hebb, 1955), perceptual and epistemic curiosity (Berlyne, 1965), and sensation seeking (Zuckerman, 1971). The AMP relates these characteristics to a student's perceived level of attention to the information delivery aspects of the course, such as textbook, lectures, and demonstrations. Scaling on this section ranges from 1 (not the least bit interested and my attention wandered) to 5 (extremely interested and my attention did not wander).

Relevance items relate to immediate, short-range, and long-range goals of business students (e.g. improved performance in college courses, obtaining a position at graduation, and successfully competing in their chosen career field). Scaling on this section ranges from 1 (not the least bit relevant (useful) for helping me…) to 5 (extremely relevant for helping me…).

Student confidence levels relate to the measurement skills taught in the course, and satisfaction items relate to a student's satisfaction with the instructor, with themselves during the course, and with aspects of course delivery such as textbook, class sessions, and examinations. Confidence and satisfaction are also measured using a five-point Likert scale. Scores are obtained for each section by summing the items. The overall academic motivation score is obtained by taking the mean of the section averages.

RESULTS

To examine construct validity of the AMP, confirmatory factor analysis with equimax rotation was performed using the SPSS statistical package. A second confirmatory factory analysis was conducted using the AMOS statistical package and structural equation modeling to verify the results. All questions loaded as anticipated on the four factors (all attention questions loaded together, relevance questions loaded together, etc.). A Pearson correlation was used to examine correlations among the questions, and the relationship between the academic motivation scores and academic achievement. The correlation among questions ranged from 0 to .20 and average overall motivation to achievement was .352. To examine the AMP's sensitivity to detecting differences in academic achievement, the motivation scores were blocked into motivation groups, high ($> M + 1$ SD), moderate (M to $+ 1$ SD), low (M to -1 SD), and very low ($< M -1$ SD). The same procedure was also used to block the attention, relevance, confidence, and satisfaction dimensions. Analysis of variance (ANOVA) was used to detect any achievement difference among the different groups.

Internal Consistency Reliability

Internal consistency reliability was determined using Cronbach alpha coefficient. Total scale reliability was .94 on motivation as a whole. Section reliability for attention was .82; relevance was .90; satisfaction was .91; and confidence was .93. Results of this study indicate that internal consistency reliabilities of the total motivation scores and all subscale scores for the AMP are strong and replicable. This is consistent with the developer's findings in the field of education (Carey et al., 2001, Pearson and Carey, 1995).

Factor Structures of the ARCS Dimensions

Attention

Students were asked to rate their level of attention to the various sources of information presentation. The first three items related to the textbook and the first two of these loaded at .30; however, these two items did load most strongly with attention versus any of the other three factors (Table 2). There were no cross loadings. Using criteria set by Hair et al. (1998), factor loadings of .30 are considered to meet minimal level; loadings of .40 are considered more important; and loadings of .50 or

greater are considered practically significant. Theses guidelines are applicable when the sample is over 100, and so would apply in this study. The students appear to perceive textbook explanations and information and textbook examples

differently from chapter practice exercise and feedback. Loadings related to class presentation and participation loaded more consistently between .57 and .76 with no cross loadings.

	Overall Alpha	Factor Loading
ATTENTION	.82	
Textbook		
Explanations and information.		.38
Examples (e.g. charts, graphs, illustrations).		.30
Chapter practice exercises and feedback.		.52
Class Presentations		
Introductory remarks (e.g. overview, review).		.57
Lectures and explanations during class.		.71
Demonstrations and examples of procedures given during class.		.72
Participation in Class		
Discussions during class sessions.		.62
In-class practice exercises.		.75
Feedback on practice activities and discussion during class.		.76
CONFIDENCE	.92	
Course Terminology		
Understand terminology used in this class.		.76
Properly use the terminology covered in this class in both written and oral form.		.77
Recognize and understand terminology if used outside this classroom.		.73
Tools Used in Decision Making		
Understand the decision making tools covered in this class.		.73
Properly use the decision making tools covered in this class.		.74
Recognize when to apply the decision making tools outside this classroom.		.74
Communication		
Explain orally the terminology and tools used in decision making with peers.		.69
Explain in written form the terminology and tools used in decision making with peers.		.75
Analyze business options and explain either orally or in written form which option is best.		.73
RELEVANCE	.90	
During College		
Understand concepts used in business to make decisions.		.40
Meet college and program requirements in my major.		.40
Acquire knowledge necessary to perform well in other classes.		.61
Transition to Work		
Have the skills necessary to quality as a professional in my field.		.74
Interview successfully for a job.		.78
Demonstrate skill as a beginning professional.		.82
As a Professional		
Analyze, plan, and evaluate business opportunities.		.71
Meet or exceed performance expectations of my employers.		.82
Advance within my career field.		.80
SATISFACTION	.92	
My Participation		
The level of personal effort I expended.		.67
My interests/efforts in exploring tools used in decision-making.		.76
My interests/efforts in discussing tools used in decision-making.		.77
Personal Development		
My feelings of personal accomplishment.		.75
My personal gains in skill and understanding of tools used in decision making.		.73
My personal attitudes and opinions about tools used in decision making.		.69
Professional Affiliation		
My perspectives on my professional role.		.59
What I now have to offer as a professional		.57
My potential for decision making in my chosen career field.		.54

Table 2 Factor Loadings

Relevance

Students were asked to judge the degree of course relevance for meeting their immediate academic and future professional goals. All items loaded appropriately on the same designated factor with loadings ranging from .40-.82 and no cross loadings. Relevance scores can be interpreted to reflect the students' perceptions of the degree of course relevance toward their personal and professional goals. Based on the loadings increasing between during college and as a professional, students seem to rate the relevance of the course more highly for long-term goals than short-term goals. Because the underlying task was decision making in relation to financial information, this seems appropriate. Traditional college students may not have much opportunity to analyze financial data in order to make decisions until they begin their career.

Confidence

Students were asked to judge their degree of confidence in performing the skills related to the financial decision-making. All of these items loaded at levels (.69 -.77) indicating these questions measured the same dimension over all three sections (terminology, use, and communication).

Satisfaction

Students were asked to judge their degree of self-satisfaction, related to participation, personal development, and professional affiliation. All items loaded together (.54 - .77) indicating all items measure the same dimension.

Relationships

Students were blocked into high, moderate, low, or very low motivation groups, and these groups were compared for academic achievement using ANOVA. There were significant differences in academic achievement found between high and moderate, low and very low motivation. There was also a significant difference in academic achievement between moderate and very low motivation. This is consistent with prior findings (Pearson and Carey, 1995).

Students' scores for attention, relevance, confidence and satisfaction were blocked as high, moderate, low and very low using standard deviation like the method used to block motivation. These blocked dimensions were then compared to academic achievement using ANOVA. Attention and relevance were nonsignificant, but confidence and satisfaction were significant in relation to academic achievement scores (Table 3). This also is consistent with prior findings (Pearson and Carey, 1995).

The ANOVAs were rerun using the high, moderate, low and very low motivation groups and including both course and instructor together as covariates. Neither course nor instructor had a significant effect on academic achievement. The one instructor teaching two sections of the same class also showed no significant difference in academic achievement in relation to motivation. The one instructor teaching two different classes also revealed no significant difference in academic achievement, by motivation.

ANOVA on Achievement Scores, by Motivation Level			
Motivation level	N	M	SD
High	56	80.1*	12.3
Moderate	115	76.3**	11.4
Low	113	75.5	11.4
Very low	52	72.1	11.7
*Significant difference between high/ (moderate, low, very low) at p < .05. **Significant difference between moderate/very low at p < .05.			
ANOVA on Achievement Scores, by Motivation Level			
Satisfaction level	N	M	SD
High	56	79.4*	11.4
Moderate	115	77.9*	11.5
Low	113	74.4**	11.8
Very low	52	71.5**	11.1
*Significant difference between high/(low, very low) at p < .05. **Significant difference between moderate/(low, very low) at p < .05.			
ANOVA on Achievement Scores, by Motivation Level			
Confidence level	N	M	SD
High	54	77.93	12.02
Moderate	130	77.74	12.20
Low	87	76.13	9.45
Very low	65	70.95*	12.30
*Differences significant between Very low motivation and all other levels. P < .05			

Table 3 ANOVA Results

DISCUSSION

When motivation was blocked into high, moderate, low, and very low the correlation of motivation and academic achievement is significant between high motivation and all other levels and between moderate and very low motivation. In a class or discipline with more students with high motivation than moderate, low, or very low motivation, the academic achievement level should be higher. Likewise, if a class were populated with students who have more low or very low motivation levels than high levels, the academic achievement levels would be expected to be lower. If certain disciplines or courses attract students with lower motivation levels as a group, this may affect the expected academic averages and should be considered in establishing the averages required for acceptance and continuation in these disciplines. This effect might also be a consideration when using student performance to evaluate instructor performance. Many colleges and universities take student performance into consideration when evaluating instructors. If the class population includes more students who have low or very low motivation levels, the academic achievement levels would be expected to be lower and the instructor's performance rating potentially negatively effected.

Confidence and satisfaction were significant in relation to academic achievement. This is consistent with previous studies (Pearson and Carey, 1995). This could indicate that the attention and relevance dimensions require further development for use in these classes. As previously noted, two of the questions in the attention dimension related to textbooks and had the lowest factor loadings in the AMP.

The sample was divided into accounting students, other business students, and non-business/undeclared students, and the ANOVA was rerun for each group. The attention and relevance questions did not load well with the group of other business students. This may be an indication that these students have different perceptions about the classes in the sample than the accounting and non-business/undeclared students. Perhaps once a business major other than accounting is chosen; student perceptions related to attention and relevance are negatively affected when taking courses outside the student's declared major. The Cronbach alpha for other business students' attention dimension was .55 compared to accounting students .86, and non-business/undeclared students of .79. The mean differences were nonsignificant, but may be further support perceptual differences. The power for attention and relevance was much lower that the power for confidence and satisfaction, which may explain why attention and relevance were not significant. The sample size may be too small to detect the effect.

Relevance appears to be a long-term consideration by the students in this study. Although students appear to believe the course might benefit them in the future, they did not appear to believe it was an immediate benefit to them. This seems logical and may at the same time explain why relevance was not significant and had two of the lower factor loadings (.40) in the factor analysis.

The attention dimension relates to characteristics such as curiosity (Berlyne, 1965) and sensation seeking (Zuckerman, 1971) and may be considered more extrinsic (Deci et al., 1991) than intrinsic (Vallerand and Bissonnette, 1992). The differences in achievement scores by motivation level may be because of intrinsic motivation and for this study, confidence and satisfaction may provide a more accurate measurement of intrinsic motivation than relevance and attention. Attention may have little affect because it is more extrinsic, and relevance appears to be too long-term of a goal to have a significant effect in this particular study.

The satisfaction questions are internally focused, "The level of personal effort I expended" and "My feelings of personal accomplishment." Confidence is a more internal individual characteristic and may be predetermined before the student enters the course.

The addition of instructor as a covariate proved nonsignificant but increased the R^2 for both overall motivation and confidence by approximately 5%, while the increase for satisfaction was only 1.9%. Intrinsic motivation is not directly influenced by external stimulus (Amabile et al., 1994), and the satisfaction section appears to be more intrinsically orientated. This small change in R^2 may further validate that satisfaction is measuring intrinsic motivation and so the addition of instructor has a smaller effect.

There was no significant difference in academic achievement when the same instructor taught two different sections of the same course, when two different instructors taught the same course, but different section, or when the same instructor taught two different classes (two different subjects). These results would further support the idea that the AMP measures intrinsic motivation (particularly satisfaction and confidence) rather than extrinsic motivation. Again, because intrinsic motivation is not directly effected by external forces, while extrinsic motivation is effected by external variables such as rewards and recognition (Amabile et al., 1994).

CONCLUSION

The AMP does appear to measure motivation of business students comparably to the results when tested using educational students. The correlation between motivation and academic achievement in this study is consistent with that of prior studies in education. The instrument must be tailored to the course under study to be effective. In this study confidence and satisfaction were significant with good power, while attention and relevance were nonsignificant with low power. Future research with a larger sample size and the AMP tailored for one business course may improve the power for all dimensions and provide better feedback about student motivations. Once perfected, the AMP would be useful for instructors to improve the curriculum guided by the four dimensions and thereby improve student academic achievement and indirectly instructor evaluations. For example, in response to low attention and relevance scores, the instructor might include more discussion about the relevance of the class to the student or include current events to promote both relevance and attention.

The AMP is consistent over different sections of the same class taught by different instructors, and there is some support for the idea that the AMP measures intrinsic motivation or that the confidence and satisfaction dimensions measure intrinsic motivation. Future research is needed to confirm or disprove this idea.

Academic achievement and motivation are believed to influence instructor evaluations (Kohn). The current study included collection of data from the standard end of course instructor evaluations used by the university in this study. A regression performed using the average evaluation score as the dependent variable and average motivation, measured using the AMP, as the independent variable resulted in an R^2 of 18 percent. ANOVA results indicate that the relationship between attention and evaluation score is significant. This would support future research using the AMP in conjunction with end of course evaluations (Carey et al., 2001).

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