Application of the Academic Motivation Scale to Graduate School Students

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ABSTRACT

In education, as in other realms of life, motivation plays a crucial role in the performance of students. Deci and Ryan’s (1985) Self Determination Theory identified various types of motivation along a continuum from weakest to strongest. Yet, until recently, no reliable method existed to accurately measure the strength of motivation along this continuum. Vallerand et al. (1992) developed the Academic Motivation Scale (AMS) as an instrument to measure Self Determination Theory. This theory identifies three levels of academic motivation— intrinsic, extrinsic, and amotivation. The AMS instrument has been used reliably to study and measure motivation levels in elementary, high school, and undergraduate university students. The results of these studies returned the finding of decreased intrinsic motivation with age. However, this instrument has yet to be applied to graduate students enrolled in a master degree program to examine whether or not the decrease in intrinsic motivation continues through to the graduate student level. This study was designed to test the validity of the AMS instrument in the application of Self-Determination Theory to graduate students. The sample for this study consisted of 240 graduate students majoring in either education or business in a private, urban, university in the northeast United States. Results of this study demonstrate the consistency of the AMS measurement instrument and provide teaching recommendations in educating this population.

INTRODUCTION

In every domain of human organization, including professional employment, sports, and social life, the study of types and levels of motivation has been extensive. In education, for instance, most of the researchers seem to center on identifying different types of motivation in various student populations. Not until 1992, however, when Robert J. Vallerand introduced his hierarchical model and his Academic Motivation Scale (AMS) did researchers have an instrument which could accurately measure levels of motivation.

Designed to test Self Determination Theory, which proposes that motivation is intrinsic, extrinsic, or amotivated, the new instrument served to assign values to these different types of motivation. Since its introduction, the AMS has been widely used to measure motivation in student populations and, based upon results, various methods have been posited to improve motivation in students. This instrument has been applied to elementary, high school, and undergraduate college students, in a number of different languages. Yet, in the effort to gain a deeper, comprehensive understanding of motivation throughout an individual’s entire academic career researchers have excluded the population of students at the graduate level. A review of the literature, in fact, has not uncovered previous research in which the AMS has been applied to graduate students at the master degree level. In the use of this instrument, this author sought to fill the void which currently exists in the application of the AMS across all levels of education. It was expected that the results of the study would provide useful information to graduate school educators.
allowing them to understand the type and level of motivation of their students, describe factors that can influence them, and highlight implications for graduate teaching pedagogy.

**LITERATURE REVIEW**

During the late 1980’s, the plethora of research from the previous 10 years in motivation started to come together in recognized theories. Success in learning was no longer attributed to natural intellect alone, but to a set of psychological forces that drives an individual to achieve success. At the same time, there was also the recognition that some students who were obviously intelligent were not reaching attainable levels of performance. This shortcoming is illustrated by researchers both in the classroom and laboratories (Ames, 1978), who show that, although children may have the same intellectual capabilities, they then choose either adaptive or maladaptive patterns which then have deep effects on cognitive performance.

Pioneering researchers such as Carol Dweck (1986) and Carol Ames (1992) believed that underperforming students’ attitude toward learning caused them to identify learning with either being smart or not smart and labeled this attitude maladaptive. Dweck argues that with the correct approach to learning, termed adaptive attitude, these students can achieve their potential. These positive approaches include focusing on appropriate challenging tasks, choice of task, reason for choosing tasks, and positive feedback. Together these approaches became universally known as “mastery goals” and “performance goals.”

In mastery goals, a student is motivated by the positive experience involved with learning something new, whereas in performance goals an individual is motivated by outperforming others. Thus, researchers concluded that motivation, and the source of motivation, must be influential. Consequently, new measuring instruments were needed to examine motivation levels in students.

In 1992, the development of the Academic Motivation Scale (AMS) by Robert J. Vallerand sought to fill the gap in instrument development through the development of a single instrument which could be used across many different student populations. Vallerand had already conducted research into Self Determination Theory (Deci, Vallerand, Pelletier, & Ryan, 1991; Vallerand & Bissonette, 1992) and was familiar with the theory’s postulations. The AMS (Vallerand, Pelletier, Blais, Briere, Senecal, & Vallieres, 1992) was designed to measure intrinsic, extrinsic, and amotivation across many disciplines. For the first time, an instrument existed that examined the three separate constructs of motivation that was presented by self determination theory. Although originally designed for college populations, the AMS has been quite versatile and has been extensively used in the United States, Canada, and Europe.

Other measuring instruments have been developed to measure internal motivation but have failed to gain the traction of the AMS. One such instrument is Finney’s (2004) version of the Achievement Goal Questionnaire which is based on the original measure by Elliot and McGregor (1999). This instrument was designed to measure four processes of motivation: mastery approach, mastery-avoidance approach, performance approach, and performance-avoidance approach. Validating the Achievement Goal Questionnaire, recent studies conducted by McCollum and Kajs (2007) indicate that older students in an educational leadership program display higher levels of mastery-approach to learning as they are more internally motivated. Other scales such as the Mastery, Performance, and Alienation Goal Scale (Archer, 1994) have also failed to achieve the acceptance and validation the Academic Motivation Scale has enjoyed in a variety of studies (Hayamizu, 1997; Grouzet, Otis, & Pelletier, 2006; Spittle, Jackson, & Casey, 2008; Barkoukis et al., 2008). However, with the development of these measuring instruments,
the domain of motivation research gained credibility as it now had accurate tools in the assessment of motivation in individuals.

**METHODOLOGY**

The participants for this research consisted of a sample of 240 matriculated graduate program students. These graduate students all attended the same private university, located in the northeast United States. This non-random sample was selected from two separate and distinct graduate schools within a university. The students were selected from the graduate business program and the graduate education program.

All participants surveyed were enrolled in summer course sessions to ensure all had completed a semester or more of graduate coursework. The selection of summer session students was also done to ensure the sample had already become accustomed to graduate school coursework and lifestyle. The graduate student sample for the study consisted of both full-time and part-time students.

Questionnaires were distributed to a total of 107 graduate business students and 133 graduate education students. Fifty-five females and 52 males composed the graduate business sample, whereas graduate education students numbered 34 males and 99 females. To better help the researcher identify possible trends in motivation, additional descriptive information was gathered from the participants. The garnering of descriptive information was also done to assist future studies and researchers who may have interest in a graduate student population. The participants had an average age of 28.65 and an average of 6 years work experience.

This researcher, seeking to unveil the reasons behind graduate student motivation, developed the following research questions which helped shape and guide this study. They seek to classify motivation as intrinsic (mastery) or extrinsic (performance) and to identify any differences between separate student bodies at the graduate level that might provide further insight into student motivation.

**Research Questions**

1. Are graduate business and education students intrinsically motivated?
2. Are graduate students mastery oriented in their approach to learning?
3. Are graduate students performance oriented in their approach to learning?
4. Do graduate students in an education program have similar motivation levels as graduate students in a business program?
5. Does the Academic Motivation Scale (AMS) return a definitive response from graduate students?

Since motivation assessment for graduate students was the goal of this researcher, a valid instrument that accurately examines motivation was required. To this end, the instrument used was Vallerand’s (1992) Achievement Motivation Scale (AMS), which has been tested and generally accepted as being a reliable test of motivation in students. The instrument was the result of extensive research done in the realm of self determination theory. The three types of motivation are located on the Self Determination Continuum which is shown below. The continuum illustrates a lack of motivation (amotivation) to increased motivation forms (extrinsic types) to self determined motivation (Intrinsic).

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Amotivation ► Extrinsic Motivation    ►Intrinsic Motivation
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The instrument has a total of 28 questions divided into 7 subscales, each consisting of 4 item questions. These questions are assessed on a 7-point-Likert-type-scale. The AMS instrument returns an overall score termed a Self Determination Index (SDI). The range on the SDI is from -18 to +18. The higher the score, the more intrinsic the participant is considered to be.

Business and education students were analyzed separately prior to being analyzed collectively. This procedure was done to identify any potential anomalies particular to either set of students. An analysis of variance was conducted to examine any differences in mean responses between business and education students. T-tests for independent samples were also performed to identify any differences between business and education students in terms of intrinsic motivation, extrinsic motivation, and amotivation.

Multiple regression was also used to study the relationship between the SDI and the descriptive information that was gathered from the participants. This analysis was used as a method to identify any causal relationships. To confirm internal validity, chi-square analysis was conducted to unveil any differences between observed and expected frequencies.

RESULTS

The purpose of this researcher was to measure and classify motivation in graduate level students using the Academic Motivation Scale (AMS). This instrument identified the predominant motivation of graduate students as being extrinsic in nature. Further statistical analysis displays that there is a relationship between certain demographic data (age, English speaking, work level, and GPA) and overall motivation but that those relationships are not very strong.

The AMS returns an overall Self Determination Index (SDI) for each participant in the study which is an overall measure of an individual’s motivation. This can be seen in table 1. The researcher examined the strengths of the components (Intrinsic, Extrinsic, and Amotivation) that combine to determine a participant’s SDI. The research also collected ancillary data to examine any possible demographic relationship to SDI scores. Additional analysis of the demographic data was conducted to explore any anomalies within demographics that may provide insight on graduate student motivation. In conducting this research, consistent attention was paid to the differences in motivation between graduate business and education students.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Score</th>
<th>Bin</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>7.3</td>
<td>-10&lt; r &lt;-8</td>
<td>1</td>
</tr>
<tr>
<td>Standard Error</td>
<td>0.19</td>
<td>-8&lt; r &lt;-6</td>
<td>0</td>
</tr>
<tr>
<td>Median</td>
<td>7.52</td>
<td>-6&lt; r &lt;-4</td>
<td>0</td>
</tr>
<tr>
<td>Mode</td>
<td>9.21</td>
<td>-4&lt; r &lt;-2</td>
<td>2</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>2.99</td>
<td>-2&lt; r &lt;0</td>
<td>1</td>
</tr>
<tr>
<td>Sample Variance</td>
<td>8.95</td>
<td>0&lt; r &lt;2</td>
<td>5</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>3.04</td>
<td>2&lt; r &lt;4</td>
<td>18</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.98</td>
<td>4&lt; r &lt;6</td>
<td>47</td>
</tr>
<tr>
<td>Range</td>
<td>21.54</td>
<td>6&lt; r &lt;8</td>
<td>67</td>
</tr>
<tr>
<td>Minimum</td>
<td>-8.38</td>
<td>8&lt; r &lt;10</td>
<td>56</td>
</tr>
<tr>
<td>Maximum</td>
<td>13.17</td>
<td>10&lt; r &lt;12</td>
<td>34</td>
</tr>
<tr>
<td>Sum</td>
<td>1751.42</td>
<td>12&lt; r &lt;14</td>
<td>9</td>
</tr>
<tr>
<td>Count</td>
<td>240</td>
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*Note.* Bin refers to the range of a response (r).
The overall SDI mean of 7.30 is distinctly lower than results obtained from the application of the AMS to other student populations which typically returns a mean of approximately 10. The results of the SDI on a sample size of 240 was negatively skewed (-.98) which is illustrated in Figure 1.

![Figure 1: Frequency of Self Determination Index Scores](image)

In seeking to understand possible reasons behind the results that the AMS model returned, demographic data were analyzed to detect any significant relationship between specific demographic items and the SDI. The correlation coefficient, pearson r, was calculated to measure the strength and direction of any linear relationships between each demographic category and the Academic Motivation Scale’s SDI. However, there was no exhibited strength in relation between any of the demographic categories and graduate students’ overall motivation.

To examine whether the demographics when combined had any impact on motivation, analysis of variance (ANOVA) was conducted to examine for significant differences between the means of each of the demographics. The results displayed in Table 2 indicate that there was a statistically significant relationship between the demographics and the SDI.

<table>
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<th>Table 2: Analysis of Variance</th>
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<td>ANOVA</td>
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<td>df</td>
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<td>Residual</td>
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<td>Total</td>
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Consequently, this researcher examined each of the demographic’s internal categories for signs of a significant relationship with the SDI by use of pivot tables to conduct a chi-square analysis to examine for any differences between observed and expected frequencies. The results of the chi-square analysis in Table 3 indicate that there is a significant difference in motivation based upon gender, level, and family expectation.

<table>
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<th>Table 3</th>
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<tr>
<td>Chi-Square Test</td>
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<tr>
<td>Gender</td>
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<tr>
<td>Chi Test</td>
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<tr>
<td>Level</td>
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<tr>
<td>Chi-Test</td>
</tr>
<tr>
<td>Family Expectation</td>
</tr>
<tr>
<td>Chi-Test</td>
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</table>
When combined the overall intrinsic mean for all graduate students returned an average of 4.66, and the extrinsic mean was 5.18. A t-test was, therefore, performed and returned a p-value of .014, indicating that there is a definite difference between extrinsic and extrinsic motivation in graduate school students. In comparing business and education students, the average business student’s intrinsic mean was 4.40 in comparison to education student’s 4.86. A t-test was conducted to examine if this difference in means was significant and returned a p-value of 5.78655E-06. The returned p-value, therefore, indicates that there is a significant difference in performance between business and education students in terms of intrinsic motivation. In considering extrinsic motivation, business students had a mean of 5.22, whereas education students had a mean of 5.18. Again, a t-test was conducted which returned a p-value of 0.349, indicating that this mean difference was not statistically significant.

These findings support the view that graduate degree students are performance rather than mastery oriented in their approach to learning and that graduate students are not intrinsically motivated. Graduate education students are more motivated overall than graduate business students, and display significantly higher levels of intrinsic motivation than their business peers. The Academic Motivation Scale, although returning information of research interest, cannot be considered valid until used in additional research with graduate populations.

LIMITATIONS

The limitations of this study necessitate much more research both in the quantitative and qualitative domains. When the researcher delved deeper into graduate student motivation and its measurement, it became apparent that any research, due to the lack of previous documented research, would result in a number of limitations.

The first, and obvious limitation of this research, was that this was the first time the AMS scale was used to measure motivation in graduate school students. Although the instrument had already been used with other student populations, no previous results existed against which to compare a graduate population. While the instrument holds merit for other student populations, until it receives further use with a graduate population, the results cannot categorically attest to its applicability to graduate students.

Also, as students in graduate programs are required to take standardized tests such as the GMAT and GRE, only students who achieve sufficient scores in such tests to gain admittance to graduate school were in the population sample. Standardized tests favor students who are performance oriented and, consequently, the sample could be biased toward performance oriented individuals.

The presence of grading as a measurement of classroom performance is also a limitation. Since all students receive a grade in each of their courses, there is a bias toward performance that yields a good grade. Quite possibly, the assigning of a grade diminishes mastery behavior in favor of task performance.

This researcher’s study was conducted during the summer sessions and consisted of students who had already completed a semester or more of graduate school. Having recently completed the spring semester, the participants in this study may have been jaded from the previous terms’ courses and consequently may not have been as motivated as a student returning for the fall semester. Also, in view of the fact that this study was conducted during the summer months, it did not include students who choose not to study during the summer. It remains unknown what effect, if any, their presence in the study would have made. And, since the study was limited to a single summer semester, it is unknown if similar results would be obtained during a regular spring or fall semester. Furthermore, the student population for this sample consisted of graduate students in the domain of business and education only. It
is unknown whether other disciples would yield similar results. Also, with regard to student sample, there was 154 females to 86 males, which may have caused a bias toward females’ opinion on motivation.

Faculty teaching summer sessions may also have had an uncontrolled bearing on the student population. Senior faculty who choose to teach summer sessions receive priority in the assignment of courses. These faculty members may, or may not, be the best teachers and motivators in the classroom. Therefore, the study may not have had a good cross-section of faculty from each of the graduate schools which participated in the research. Therefore, the study was also limited to faculty who choose to teach during the summer.

The location of the university in the study is another limiting factor. As the university was located in a large metropolitan city, results obtained can only be used to make inferences about universities in similarly sized metropolitan cities. No inferences can be drawn from this study that address motivation in graduate students who choose to attend colleges in smaller, urban areas.

**RECOMMENDATIONS**

Since this author explored a sphere of research which has seen limited inquiry, recommendations offered seek to assist future researchers establishing the domain of graduate student motivation as a sphere of recognizable research.

Future researchers should begin with the application of the AMS instrument to other graduate student samples. The intent of this recommendation is to establish the AMS as a reliable measuring tool in graduate student motivation. From this reliable starting point, accurate inferences can then be made about graduate student populations. It would also be desirable to test the instrument with other disciplines such as engineering and liberal arts to examine for significant differences that could be attributed to major.

Future researchers may also wish to include investigation of students who take online classes to examine for possible differences in motivation of students who prefer that mode of instruction. Furthermore, this researcher would also recommend measuring student motivation upon entering a program to assess whether motivation increases or decreases as one progresses through graduate school.

This researcher also recommends that future investigators examine for differences between genders. The chi square analysis revealed that although gender did not strongly affect the SDI, there were significant internal differences between males and females. Such differences could be very revealing in explaining motivation. Differences between levels of family expectation of degree, and work level (lower, middle, upper) also warrant further analysis for internal differences.

There are leadership and instructional recommendations that emerge from this study also. While faculty are primarily charged with effective instruction of students, they are also leaders in the classroom. From a leadership viewpoint, this study serves as an indication that much effort needs to be exercised in the motivation of students to the level of passion a faculty member may have, and should have, for the subject matter. The researcher’s study also serves as a challenge to faculty to better understand the priorities of their students who are externally motivated.

**CONCLUSIONS**

From the outset, it was the intention of this research to uncover and measure the motivation that drives graduate students. Individuals return to graduate school for a variety of reasons such as the desire to improve one’s career, learn new things, avail of scholarships or employer reimbursement. However,
what is common to all is that they must possess enough motivation to complete a graduate program. The
level, or strength of this motivation, and its source was a constant throughout this study. The application
of the AMS was a necessary first step in understanding graduate student motivation through the lens of
SDT. As today’s graduate students will hold many influential positions in all facets of society, it is
important to understand their motivation as it is this motivation that will determine the direction of
society in years to come.

Subsequent researchers should be encouraged to not only measure graduate student motivation, but
also uncover new methods to promote overall motivation while in a graduate program.

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