

Motivation, Distraction, and Other Factors Associated With Student Performance in Business Data Management and Information Systems

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This study examines determinants of student performance in Business Data Management and Information Systems. Of the motivation factors studied (intended grade, intention to attend graduate school, and intention to obtain a professional certificate) only the first factor has some association with student performance. None of the three distraction factors (work hours, work type, and course load) significantly negatively affect student performance. However, while course load doesn't negatively affect students' grades, there is weak evidence that it may lower the total points the students earn for the course. Of the three self-perceived ability factors (Reading, Writing, and Listening), only Writing has some significant association with student performance. As to other factors, gender has some significant association with student performance, but age does not. Finally, the pre-requisite Mathematic course grade and overall GPA are strong predictors of student performance in Business Data Management and Information Systems.

Keywords: student performance, business data management and information systems, motivation factors, distraction factors, self-perceived factors, prior ability factors, gender and age

INTRODUCTION

Several prior research studies have explored various factors (e.g., general academic performance, aptitude, prior exposure to mathematics, prior exposure to accounting, age, gender, motivation, effort, and other intervening variables) that are associated with student performance in college-level courses. Motivation and effort are widely believed to significantly influence individual performance in college. However, as the review of prior research below indicates, very few studies have investigated their impact on required undergraduate Business Data Management and Information Systems courses. This study investigates the associations between selected motivation, distraction, self-perceived ability, prior ability, and other (gender and age) factors and student performance in the undergraduate Business Data Management and Information Systems course at a residential public university in the U.S.

As proxies for motivation, the authors use the grade the students intend to earn in the course, intention to attend graduate school, and intention to obtain a Professional Certificate [e.g., Certified Public Accountant (CPA), Certified Management Accountant (CMA), Certified Financial Planner (CFP), Certified Financial Analyst (CFA), Leadership Graduate Certificate (LGC), Decision Making Graduate Certificate (DMGC), or Data Analytics Graduate Certificate (DAGC)]. As proxies for distraction, the authors use the number of hours of work per week, the type of work (whether it is related to business data analysis, information systems, accounting, finance, other business area, or other non-business related) and the number of courses taken per semester. The study measures students' self-perceived abilities using their own self-reported reading, writing, and listening abilities. Students' prior abilities are measured by the actual grade earned in Applied Statistics (MATH 140) course, which is a prerequisite for the Business Data Management and Information Systems course, and by Overall Grade Point Average (OGPA.) The dependent variable, student performance, is measured in two different ways: the letter grade for the course (hereafter referred to as "Letter Grade"), and the total overall points percent score (hereafter referred to as 'Overall Points') for the course.

One of the motivations of this study is the belief that identifying factors that motivate students to perform well and factors that distract them from performing well may help us emphasize the motivation factors and discourage the distraction factors. Another purpose of the study is to provide empirical support to the intuitive notion that motivation leads to better student performance. Also, the study could help us determine whether students accurately assess their reading, writing, and listening abilities. If they do, there should be significant association between their assessment of these abilities and their performance. If there is no significant association between their evaluation of these abilities and their performance, this would indicate that the students are not making accurate evaluations of their abilities, which could be detrimental to their success in college.

The remaining parts of the paper present a review of prior research, a discussion of the study objectives, variables, hypotheses, research methodology, and results. The paper ends with conclusions, recommendations, study limitations, and suggestions for further research.

REVIEW OF PRIOR RESEARCH

Several prior studies have examined the association between various factors (e.g., general academic performance, aptitude, prior exposure to mathematics, prior exposure to accounting, gender, age, motivation, effort, and other intervening variables) and student performance in college-level courses. The overall Grade Point Average (OGPA) is used frequently as a proxy for prior academic performance and aptitude.

Several researchers, using data from various U.S. universities, find evidence supporting OGPA as a significant predictor of performance in accounting courses (Alanzi, 2015; Gupta & Maksy, 2014; Maksy, 2012, 2014; Maksy & Wagaman, 2012, 2013, 2015; Maksy & Zheng, 2008; Mo & Waples, 2015). In finance, Biktimirov and Klassen (2008) find OGPA to be a strong predictor of grade in the Financial Management course required of all business majors. Many researchers find evidence that both OGPA and the grade(s) in the prerequisite course(s) are significant predictors of performance in the course under investigation (Gupta & Maksy, 2019; Hao & Maksy, 2019; Leshchinskii & Maksy, 2019; Maksy, 2017; Maksy & Rodriguez, 2017, 2018). In Saudi Arabia, Al-Twajjry (2010) finds that performance in high school, achievement in pre-university mathematics, and the grade in the financial accounting course as strong predictors of performance in Managerial Accounting. From Kingdom of Bahrain, Kukreja and Aali (2013) find that GPA in high school, accounting or finance major, and the number of prior courses taken, but most importantly the grade in financial accounting as strong predictors of performance in Managerial Accounting.

Prior studies about the influence of motivation and effort on student performance also report conflicting results. Maksy and co-investigators use "the grade the student intends to earn in the course" as a proxy for motivation and find it to be significantly associated with student performance in various accounting, auditing, finance, investment, and management information systems courses (Gupta & Maksy, 2019; Hao

& Maksy, 2019; Leshchinskii & Maksy, 2019; Maksy, 2017; Maksy & Rodriguez, 2017). Biktimirov and Klassen (2008) find a weak association between hits to a course management system and grades in a finance course. However, using self-reported data, Didia and Hasnat (1998) present very weak counter-intuitive evidence for one of two Ordinary Least Square (OLS) models, but not for the ordered-probit models, that the more time spent studying per week, the lower the grade in the Introductory Finance course. However, they did not control for GPA.

Also, there has been increased interest in studying the influence of intervening variables on student performance. Didia and Hasnat (1998) find a strong positive association between the number of credit hours enrolled in the semester and course grades. This result may seem counterintuitive; however, some research (e.g., Gupta & Maksy, 2014), shows that students with higher GPAs take more courses and more credits per semester. Rich (2006) reports a significant negative association between exam scores and class absences and tardiness suggesting that students who miss class or arrive late tended to perform worse in a finance course. Guney (2009) shows there is a clear positive association between attendance and academic performance in accounting courses. Alanzi (2015) finds significant association between class attendance (and college experience) and student performance in a Cost Accounting course at a university in Kuwait. Lynn and Robinson-Backmon (2005) find a significant negative association between employment status and learning outcomes in upper-division accounting courses. These authors also indicate that a student's self-assessment of achieving course learning objectives is significantly and positively related to grade performance. In contrast, Maksy and Zheng (2008), Maksy (2012, 2014), Maksy and Wagaman (2012, 2013, 2015) and Gupta and Maksy (2014), find no significant negative association between the number of hours of work per week and student performance in various accounting, auditing, and investment courses. Additionally, in more recent studies, Maksy and co-investigators find no significant negative associations between job hours, job type (if it is not related to accounting or business in general) and course load and student performance in various accounting, auditing, finance, investment, and management information systems courses (Gupta & Maksy, 2019; Leshchinskii & Maksy, 2019; Maksy, 2017; Maksy & Rodriguez, 2017, 2018). Al-Twajry (2010) finds that students carrying more than 15 hours course load per semester perform better than others in a Managerial Accounting course. In contrast, Hao and Maksy (2019) find a significant negative association between course load and student performance in an Advanced Accounting course. Tessema et al. (2014) report that if students work 10 hours or less per week, they are more satisfied and have higher GPAs than students who work more than 10 hours per week. Schleifer and Dull (2009) address metacognition in students and find a strong link between metacognitive attributes and academic performance. Metacognition is frequently described as 'thinking about thinking' and includes knowledge about when and how to use particular strategies for learning or for problem-solving.

Gender and age are two demographic variables that receive less attention than those factors discussed above, but the results are still inconclusive. Alanzi (2015) finds that gender, age, nationality, scores and majors in high school, grades in prerequisite courses and overall GPA in college, have no significant association with student performance in Cost Accounting. However, Rodrigues et al. (2018) report that males perform better than females in a Professional Entry Exam for Accountants in Brazil. Rodrigues et al. (2018) also report that younger persons perform better than older persons in a Professional Entry Exam for Accountants in Brazil. However, Schrouder and Rhodd (2013) report that older and more experienced students perform better than younger and less experienced students in a Public Administration course. Also, Almunals et al. (2014) report that females perform better than males in the accounting major. They also find other factors significantly associated with the performance of students majoring in accounting including high school major (science majors perform better than humanities majors), marital status (married students perform better than single students), frequency of doing homework, class participation, peer interaction, and number of days studying before the exam.

It is also possible that other intervening variables, besides the demographic variables, may affect student performance in accounting courses in college. Gracia and Jenkins (2003) observe that students who actively demonstrate commitment and self-responsibility towards their studies tend to do well in formal assessments. They also agree with Lane and Porch (2002) who suggest that other important factors like student motivation may explain student performance. Also, Seow et al. (2014) report that prior academic

achievement, admission interview, critical thinking, and mathematical aptitude are significantly associated with successful academic performance in an undergraduate accounting degree at a Singapore University.

Conflicting results are also observed about the association between student performance in introductory accounting and their performance in non-introductory accounting courses. Tickell and Smyrniotis (2005) find that the best predictor of academic performance in any one year is the performance in the same discipline in the previous year. Doran et al. (1991) reports a very surprising and counterintuitive result that performance in the introductory accounting course hurts performance in subsequent accounting courses.

While prior research has been largely inconclusive or replete with conflicting results, it is not the purpose of this study to resolve all these conflicts. In this study, the authors' primary objective is to provide more insight on areas in which there was some general agreement. Since motivation and effort has generally been positively associated with student performance, the authors try, in this study, to test whether some new selected motivation factors affect student performance in the Business Data Management and Information Systems course. The authors also look at several factors commonly viewed as possibly distracting students from performing well and test whether they are negatively affecting student performance. Moreover, the study investigates the impact of three self-perceived abilities factors on student performance and whether students accurately assess those abilities. Also, because some prior studies showed some differences between the performance of males and females, and of younger and older students, this study investigates whether gender and age have similar effects on student performance in Business Data Management and Information Systems. Furthermore, the study investigates the impact of two specific measures of prior abilities on student performance and also uses them as control variables while testing for the association between motivation, distraction, self-perceived abilities, and other factors and student performance in the Business Data Management and Information Systems course.

STUDY OBJECTIVES AND HYPOTHESES

The first objective of this research is to study the association between three selected motivation factors (the grade the student intends to earn in the course, the student's intention to attend graduate school, and the student's intention to obtain a professional certificate after completing their undergraduate degree) and the student's performance in the Business Data Management and Information Systems course at a residential public university in the U.S. The authors hypothesize that there are positive and significant associations between those motivating factors and student performance. That is, students who intend to earn higher grades, attend graduate school, or obtain a professional certificate, are motivated to perform well and do perform well in the course to achieve their intentions.

The second objective is to study the association between three distraction factors (the student's number of work hours per week during the semester, the student's work type, if it is not related to business in general, and the student's number of courses taken in the semester) and the student's performance in the Business Data Management and Information Systems course. Intuitively, the higher the number of work hours per week, the less time the student will have to study for the Business Data Management and Information Systems course resulting in a lower course grade. Also, if a student's work is not business-related, it will not help the student do well in the Business Data Management and Information Systems course. Furthermore, the performance of a student taking a higher number of courses will be affected negatively because the student may not be able to devote sufficient number of hours of study to the Business Data Management and Information Systems course.

In light of the prior discussion, the authors hypothesize that higher weekly work hours, employment unrelated to business, and a greater number of courses taken in a semester will each be significantly negatively associated with student performance in the Business Data Management and Information Systems course. Of course, distraction factors may offset each other thereby cancelling out any single factor's effect. For example, a student who works a higher number of hours per week may take fewer courses, and vice versa, so that there is no negative effect on performance. For this reason, the authors test the effect of each distraction factor on student performance while controlling for the other two factors. The authors also investigate the associations among the distraction factors themselves.

The third objective is to study the associations between students' performance in the Business Data Management and Information Systems course and their current self-perceived abilities in reading, writing, and listening. A positive association between self-reported abilities and performance may indicate that students reasonably assess their abilities. A lack of positive and significant association between certain abilities and performance could be due to the possibility that those abilities are irrelevant to the course's performance or to students' inaccurate assessment of their abilities. Before the students filled out the questionnaires, the authors instructed them to be as honest as possible in their answers so students who plan to take this course in the future would benefit from the results of this research. The authors assume that the students followed those instructions and, thus, the authors hypothesize positive and significant associations between students' self-perceived abilities and their performance in the Business Data Management and Information Systems course.

The fourth objective is to study the association between students' performance in the Business Data Management and Information Systems course, their grade in the pre-requisite Applied Statistics course, and their overall GPA. Based on the results of many prior studies, the authors hypothesize that there are positive and significant associations between these prior actual abilities and student performance. Thus, the hypotheses are that students who have earned higher grades in Applied Statistics (MATH 140), or have high GPAs, will earn higher grades in the Business Data Management and Information Systems course, and vice versa.

The fifth objective is to examine the association between students' performance in the Business Data Management and Information Systems course and their gender and age. Based on the results of most prior studies, the authors do not expect any significant association between gender and student performance in the Business Data Management and Information Systems course. The authors included this gender variable to empirically show whether this study's results align with the results of most prior studies. The authors believe that age will not have a significant effect on student performance because the vast majority of students taking this course are between 18 and 22 years old.

Study Dependent Variables

In addition to the 13 independent variables described under the study objectives above, the study uses two dependent variables. Initially, the authors decided to use only the letter grade in the course (A, B, C, etc.) as the measure of student performance and the dependent variable (hereafter referred to as "Letter Grade"). However, the authors quickly realized that the letter grade treats a student earning the lowest end of the grade range as having the same exact performance as a student earning the highest end. For example, assuming the instructor doesn't use pluses and minuses, a student with a total percentage points of 80 and another with a total percentage points of 89 would be considered having equal performance since both students receive a B for the course, even though the first student is one percentage point away from a C grade and the other student is one percentage point away from an A grade. To address this limitation, the authors decided to add a second dependent variable: the overall points percentage earned in the course (hereafter referred to as "Overall Points"). This variable provides a more granular and precise measure of student performance.

Study Hypotheses

The study tests one hypothesis for each independent variable. The formal statements of all 13 hypotheses are presented (classified under five categories of factors) in APPENDIX A. To prevent redundancy, each hypothesis is presented in the alternate form only.

RESEARCH METHODOLOGY

Survey Instrument

Besides the study variables, the survey instrument includes some demographic and other information. To address ethical, confidentiality, and potential risk issues pertaining to participants, the authors completed the Collaborative Institutional Training Initiative (CITI) Program's Social & Behavioral Research –

Basic/Refresher (Stage 1 - Basic Course) related to ‘Protecting Human Research Participants.’ as required by the University’s Institutional Review Board (IRB). The certificates of completion of the CITI training are on file with the researchers and available for presentation upon request by any other interested party.

Study Sample

In fall of 2024, the authors collected the survey instrument data from 110 of 115 students enrolled in all four sections of the undergraduate Business Data Management and Information Systems course offered at a US public residential university. Of the 110 students, 15 failed to provide their ID numbers, resulting in a final sample of 95 observations. As of fall 2024, the university enrolls about 8,200 students, with about 1,000 students in the College of Business. It is a state-supported university with public access as a central focus of its mission statement. It is located near Philadelphia, one of the largest cities in the United States. The two instructors teaching the four sections of the course supplied (using only students’ ID numbers for confidentiality purposes) data for the two dependent variables— Letter Grade and Overall Points. Both instructors used the same textbook.

Each of the three authors independently coded the students’ survey responses on an Excel spreadsheet. The authors then matched the three coded spreadsheets and resolved any discrepancy by referring to the original questionnaire. This process eliminated all coding errors and ensured that all authors agreed on the data.

Data Analysis

To test the hypotheses outlined in APPENDIX A, the study uses one-way analysis of variance (ANOVA), Pearson and Spearman’s correlations, partial correlations, and ordinary least square (OLS) linear regression analyses. Each method offers unique strengths that complement one another. ANOVA identifies whether mean differences exist across groups (e.g., by intended course grade or gender), but it does not measure the strength or direction of relationships. Pearson correlation measures the strength and direction of linear relationships between continuous variables, assuming normality. Spearman correlation, a non-parametric alternative, is less sensitive to outliers and suitable for ordinal or non-normally distributed data. Partial correlations assess the relationship between two variables while controlling for others, helping to isolate effects of interest. OLS regression evaluates the effect of multiple independent variables on the dependent variable, providing estimates of both strength and direction. Using multiple statistical methods strengthens the validity of the results by allowing cross-verification and accommodating different types of data and assumptions.

STUDY RESULTS

Table 1 presents the minimum and maximum values, the mean, and the standard deviation for each of the 15 variables of the study. That Table shows an average grade in the Business Data Management and Information Systems (BDM&IS) course of 3.37 out of 4.00, which is higher than the average grade of 3.22 in the Applied Statistics (MATH 140) course, which is the prerequisite for the BDM&IS course. The average BDM&IS course grade is also higher than the overall GPA of 3.25, but lower than the average Intended Grade of 3.53, indicating that the students were somewhat overly optimistic about the grade they intended to earn in course.

In comparison, the Maksy and Rodriguez (2018) study of performance determinants in a Managerial Accounting course at a New England Public University reports a Managerial Accounting course grade of 2.81 (which is much lower than in this study), GPA in a prerequisite course of 3.40 (which is higher than in this study), and overall GPA of 3.02 (which is lower than in this study). Interestingly, the positive difference of 0.15 between the average course letter grade and the average Applied Statistics prerequisite course grade is significantly smaller than the comparable negative difference of 0.59 reported by Maksy and Rodriguez (2018). However, the positive difference of 0.12 between the average course letter grade and overall GPA is much smaller than the negative difference of 0.21 reported by Maksy and Rodriguez (2018). On the other hand, the negative difference of 0.16 between the average course letter grade and the

average Intended Grade in this study is significantly lower than the positive difference of 0.27 reported by Maksy and Rodriguez (2018). It seems that, for some reason, the students in this study were overly optimistic about what grade they intend to earn, whereas the students in the Maksy and Rodriguez's Study earned better grades than what they intended to earn.

Following is an analysis of the study results by the factors investigated (motivation, distraction, self-perceived abilities, prior abilities, and other factors), taking all observations into account.

Motivation Factors Associated With Student Performance

One-way ANOVA (Table 2) and Pearson/Spearman correlations (Table 3) are deployed to assess the association between Intended Grade (IGR) and student performance and neither analysis reveals significant association between IGR and student performance. However, because IGR significantly correlates with prior-ability measures such as Overall GPA (OGPA; Spearman's $\rho = .387, p < .001$) and the grade in the prerequisite mathematics course (MATH 140) (Spearman's $\rho = .301, p < .001$), these bivariate tests can obscure any direct effect of IGR on performance. To address this, we use partial correlations (Table 4) to isolate the "pure" relationship between IGR and performance by controlling for OGPA and MATH 140 grade. As Table 4 indicates, the Intended Grade (IGR) motivation variable, discussed in H₁, is significantly negatively associated with student performance—measured by Letter Grade—at the 0.10 level, when controlling for prior ability factors (Overall GPA and MATH 140 grade).

Regression analyses (Table 5) further show that IGR predicts Letter Grade ($p = .063$) and Overall Points ($p = .093$). Thus, whereas simple ANOVA and correlations fail to detect any IGR–performance association, partial correlations reveal a marginal but meaningful association. This suggests that, after accounting for prior math and overall academic ability, students who intend for a higher course grade are likely to receive slightly lower course letter grade. One possible explanation is that some students may have overestimated their capabilities or expressed unrealistic goals without sufficient consideration of their academic abilities and preparedness. These findings highlight that intention alone is not a strong predictor of academic performance unless it's supported by sufficient academic abilities.

As Tables 2–5 indicate, all statistical models used in the study did not show any significant associations between the second motivation variable, intention to attend graduate school (IGS) discussed in H₂, and student performance in the BDM&IS course.

As Table 2 (ANOVA) indicates, the third motivation variable, Intention for obtaining Professional Certificates (IPC), discussed in H₃, is significantly associated with student performance (at the .038 significance level), but only when student performance is measured by "Letter Grade". No other statistical models used in the study showed any significant associations between IPC and student performance in the BDM&IS course.

The results of this study (of some significant associations between Intended Grade (IGR) and student performance and no significant associations between Intention to attend Graduate School (IGS) and student performance, and marginally significant associations between Intention in obtaining Professional Certifications (IPC) and student performance,—are in agreement with several prior studies (e.g., Gupta & Maksy, 2019; Hao & Maksy, 2019; Leshchinskii & Maksy, 2019; Maksy, 2017; Maksy & Rodriguez, 2017). An argument could be made that the lack of significant associations involving IGS and IPC is due to the fact that most students were taking the BDM&IS course too early in their college study to be thinking about going to graduate school or obtaining a professional certificate. So, when they were asked in the questionnaire "do you intend to go to graduate school?" or "do you intend to obtain a professional certificate?" while some said "No", most said "Yes" or "Maybe" because there is no penalty for saying "Yes" or "Maybe." But those who selected "Yes" or "Maybe" didn't really study hard to get good grades to help them get into good graduate schools or obtain a professional certificate.

Distraction Factors Associated With Student Performance

As the regression analysis in Table 5 indicates, of the three distraction factors discussed in H₄ to H₆, only the Course Load variable, discussed in H₆, shows some significant negative association with student performance (but only at the lowest significance level of .10, and only when student performance is defined

as “Points.”). However, none of the other statistical tests used in the study showed any significant negative associations between the Course Load and student performance in the BDM&IS course. Also, there were no significant associations whatsoever (negative or positive) between Work Hours or Work Type and student performance in the BDM&IS course under all statistical tests used in the study.

Because one distraction factor can cancel out the negative effect of another distraction factor on student performance (for example, a student may be working more hours per week but taking a lower course load or vice versa may have no negative effect on his or her performance) the authors decided to test the effect of each distraction factor on performance while controlling for the other two distraction factors. As Table 6, Part A, indicates, when the authors controlled for the other two distraction factors (Work Type and Course Load), Work Hours did not show any significant negative associations with student performance (however defined). Similarly, neither Work Type nor Course Load negatively affected student performance when the authors controlled for the other two distraction factors. Also, as Table 6, Part B, indicates, when the authors controlled for the other two distraction factors and the two prior ability factors, there were no significant negative associations between Work Hours, Work Type, or Course Load and student performance (however defined). The results of this study showing lack of significant negative associations between each of the three distraction factors and student performance, agree with several more recent studies (e.g., Gupta & Maksy, 2019; Leshchinskii & Maksy, 2019; Maksy, 2017; Maksy & Rodriguez, 2017, 2018).

Self-Perceived Ability Factors Associated With Student Performance

As Table 2 indicates, of the three self-perceived ability factors discussed in H₇ to H₁₀, only the second self-perceived ability variable, Writing, discussed in H₈, is significantly associated with student performance (but only at the lowest significance level of .10, and only when student performance is defined as “Letter Grade.” However, none of the other statistical tests used in the study showed any significant associations between the Writing ability and student performance in the BDM&IS course. Also, there were no significant associations between the Reading or Listening ability and student performance in the BDM&IS course under all statistical tests used in the study.

Prior Actual Ability (Control) Factors Associated With Student Performance

All statistical tests in Tables 2, 3 and 5 show a significant positive association between Overall Grade Point Average (OGPA) and student performance in the BDM&IS course—regardless of whether performance is defined by Letter Grade or Overall Points. This finding suggests that past academic performance is a consistent predictor of success in the BDM&IS course. Specifically, the correlation test (Table 3) and regression test (Table 5) show associations at the $p < .001$ level, while the ANOVA test (Table 2) shows a significant association at the $p = .029$ level for Overall Points and at the $p = .053$ level (marginal significance) for Letter Grade.

The association between MATH 140 Grade and student performance in the BDM&IS course is significant (but only under Pearson and Spearman correlations tests) and it is not as strong as the association between OGPA and student performance in the BDM&IS course. No significant associations between MATH 140 grade and student performance (however defined) were shown under the ANOVA or regression tests, suggesting that math performance may play a more limited role in predicting success in the BDM&IS course compared to overall GPA. The results of this study showing significant associations between OGPA and student performance, agree with almost all prior studies mentioned in this paper. The results of this study showing some significant associations between the prerequisite course(s) and student performance, align with several prior studies (e.g., Al-Twaijry, 2010; Gupta & Maksy, 2019; Hao & Maksy 2019; Leshchinskii & Maksy, 2019; Maksy, 2017; Maksy & Rezvanian, 2017; Maksy & Rodriguez, 2017, 2018).

Other Factors (Gender and Age) Associated With Student Performance

None of the tests in Tables 2 through 5 show any significant associations between age and student performance (however defined) in the BDM&IS course. This result lends support to H₁₃ and is in agreement with many prior studies (e.g., Alanzi, 2015; and Leshchinskii & Maksy, 2019).

The Spearman correlations test (in Table 3) and the regression test (in Table 5) show significant associations (at .078 and .018 levels of significance, respectively) between student gender and student performance (but only when performance is defined as “Total Points”). Also, when the authors control for the prior ability factors, the partial correlation analysis (Table 4) reveals a statistically significant association between gender and student performance—but only when performance is defined as Overall Points. This suggests that, after adjusting for prior academic ability, gender remains a factor influencing the percentage of points earned in the course, though not the final letter grade. In contrast, when performance is measured as Letter Grade, none of tests used in the study showed any significant associations between gender and student performance. This discrepancy may be due to the limited sensitivity of letter grades compared to percentage scores. Letter grades group a range of performance levels into broad categories (e.g., an 80% and an 89% both receive a B), potentially obscuring small but meaningful differences in student achievement. As a result, variations in performance that may be influenced by gender can go undetected when using letter grades. In contrast, the overall points earned is a more granular measure that captures subtle differences in performance, making it more sensitive to identifying statistically significant associations. Therefore, the influence of gender on student performance may only emerge when a more precise metric—such as overall points—is used.

To identify which gender (male or female) performs better in the BDM&IS course, the authors ran a cross-tabulation between gender and grade as shown in Table 7. A closer look at Table 7 reveals that female students perform slightly better than male students (in the BDM&IS course, with an average grade of 3.40 compared to 3.21 (on a 4.0 scale). While a higher percentage of male students (58.8%) earned an A grade than female students (48.3%), the percentage of female students earning a B grade was much higher than male students (45.0% vs. 17.7%). These results suggest that although more male students reached the top grade tier, female students demonstrated stronger overall consistency in achieving high grades across the A and B ranges.

CONCLUSIONS AND RECOMMENDATIONS

One important finding of this study is that a student’s intended grade (IGR) in the BDM&IS course is significantly correlated with their prior academic abilities, including Overall GPA (OGPA; Spearman’s $\rho = .387, p < .001$) and the grade in the prerequisite mathematics course, MATH 140 ($\rho = .301, p < .001$). When controlling for these prior-ability variables, partial correlation analysis (Table 4) reveals a statistically significant negative association between IGR and Letter Grade at the 10% level ($p < .10$), suggesting that students who report higher intended grades tend to receive slightly lower course grades in BDM&IS after adjusting for academic preparedness. This counterintuitive result may reflect some students overestimating their capabilities or setting unrealistic academic goals that are not supported by their prior academic performance, highlighting that intention alone is not a reliable predictor of academic success without adequate academic preparedness.

Intention to attend graduate school is not shown in this study to be motivating students to perform well in this course. There is weak evidence that the intention to obtain a professional certificate (after obtaining the bachelor degree) may be motivating students to perform well in the BDM&IS course. The evidence is weak because it shows only in one of the four statistical tests used in the study (the ANOVA test) and only when performance is measured as “Letter Grade.” One possible reason that the intention to pursue graduate studies was not a motivating factor to perform well in the BDM&IS course is that the course is being taken early in the students’ college education, and most students usually begin to think about graduate school education in their junior or senior years.

In light of these findings, the authors recommend that business faculty should interpret self-reported intended grades with caution and consider supplementing them with objective measures of academic preparedness, such as GPA and prerequisite course performance, when assessing student motivation. Additionally, faculty may wish to implement structured interventions early in the course to help students align their performance goals with realistic academic strategies and study behaviors. Since the intention to pursue graduate studies does not appear to motivate improved performance—possibly due to the early

timing of the BDM&IS course in students' academic careers—advisors and instructors should consider incorporating career and graduate school planning into later courses. Meanwhile, the weak and inconsistent effect of professional certification intentions suggests that faculty should not rely solely on long-term professional aspirations as motivational levers, but rather foster more immediate, course-specific engagement strategies to improve outcomes.

Another finding of this study is that the distraction variables used in the study (i.e., number of work hours per week, working in non-business-related jobs, and number of courses taken in the semester) have no significant negative effects on students' grades in the BDM&IS course. Based on this finding, the authors recommend that business faculty need not encourage their students to work fewer hours per week to earn higher grades in the BDM&IS course. Furthermore, if students must work a significant number of hours anyway to support themselves or their families, business faculty need not stress to the students that they must work in a business-related job. In addition, business faculty need not encourage those students to take fewer courses per semester to earn higher grades in the BDM&IS course. Business faculty may advise their students who plan to take higher than average course loads to make sure that they manage their time effectively. Finally, when advising students with poor performance, business faculty should consider a range of potential causes—such as lack of academic preparedness, ineffective study habits, or poor time management—beyond factors like excessive work hours, non-business-related jobs, or heavy course loads, to provide more comprehensive and effective guidance.

A third finding of the study is that students over estimate their reading, writing, and listening abilities as all four statistical models used in the study show no associations between these abilities and student performance (with a minor exception that one test—ANOVA—shows some significant association between writing ability and student performance but only when performance is defined as “Grade and only at the lowest level of significance of .10). One possible reason that these three abilities do not show significant association with student performance is that students, especially those with average or poor abilities, may have overstated those abilities. When most students taking the survey report that their Reading, Writing, and Listening abilities are excellent or very good but only a smaller percentage of the students earn grades of A's and B's, no significant association will result between these abilities and student performance.

Based on this finding, it is reasonable to suggest that business faculty encourage students to strengthen their writing skills by highlighting that prior research consistently links strong writing abilities with higher academic performance in BDM&IS courses. Another recommendation in this regard is that the business faculty should caution students against overestimating their reading, writing, and listening abilities, as such overconfidence may discourage them from seeking academic support—for instance, utilizing services like the University Writing Center and other campus resources dedicated to enhancing student learning.

As expected and consistent with findings from prior studies concerning other courses, a fourth finding of this study is that students with strong prior actual ability tend to earn higher grades in the BDM&IS course. Specifically, the study finds statistically significant associations between students' performance in the BDM&IS course and two key indicators of prior ability: overall GPA and grades earned in the prerequisite (MATH 140) course. These results reinforce the notion that foundational academic skills and prior academic success are important predictors of future performance in business-related coursework. Given these findings, the authors recommend that business faculty encourage their students to study diligently and aim for high grades in all courses—including the prerequisite Applied Statistics (MATH 140) course—to improve their overall GPA. Emphasizing that research shows students with higher OGPA tend to perform better in the BDM&IS course can help reinforce this message.

As anticipated and consistent with findings of prior studies in a different academic context, a fifth key finding of this study is that students' age has no significant associations with student performance. However, the study shows some evidence that female students slightly outperform their male counterparts in the BDM&IS course. Given this observation, the authors recommend that business faculty should remain attentive to potential performance gaps that may be influenced by gender-related learning styles or academic engagement patterns. To support equitable outcomes, faculty are encouraged to implement inclusive teaching practices that accommodate diverse learning needs and promote academic success for all students, irrespective of gender or age.

STUDY LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

This study is subject to some limitations. First, it relies on self-reported data for variables such as reading, writing, and listening abilities, which may be influenced by social desirability bias or inaccurate self-assessment. Second, the data are drawn from a single course at one public, residential university, which may limit the applicability of the findings to other courses, disciplines, institutions, including private or commuter schools. Therefore, future research should consider replicating the study in private and commuter school settings to enhance generalizability. Third, the study sample is somewhat small relative to the number of independent variables analyzed and, hence, the results may not be as robust as they would have been if the sample was larger. Thus, another suggestion for further research is to replicate the study using a larger sample.

REFERENCES

- Alanzi, K.A. (2015). Determinants of students' performance in cost accounting-further evidence from Kuwait. *World Journal of Management*, 6(1), 136–152.
- Almunals, T., Alfraih, M., & Alharbi, F. (2014). Determinants of accounting students' performance. *Business Education and Accreditation*, 6(2), 1–9.
- Al-Twajjry, A. (2010). Student academic performance in undergraduate managerial-accounting courses. *Journal of Education for Business*, 85(6), 311–322.
- Biktimirov E. N. and K. J. Klassen. (2008). Relationship between use of online support materials and student performance in an introductory finance course, *Journal of Education for Business*, 83(3), January/February, 153–158. DOI: 10.3200/JOEB.83.3.153-158
- Didia, D., & Hasnat, B. (1998). The determinants of performance in the university introductory finance course. *Financial Practice and Education*, 1(1), 102–107.
- Doran, B., Bouillon, M.L., & Smith, C.G. (1991). Determinants of student performance in accounting principles I and II. *Issues in Accounting Education*, 6(1), 74–84.
- Gracia, L., & Jenkins, E. (2003). A quantitative exploration on an undergraduate accounting programme of study. *Accounting Education*, 12(1), 15–32.
- Guney, Y. (2009). Exogenous and endogenous factors influencing students' performance in undergraduate accounting modules. *Accounting Education*, 18(1), 51–73.
- Gupta, K., & Maksy, M.M. (2014). Factors associated with student performance in an investments course: An empirical study. *Journal of Finance and Accountancy*, 16, 86–112.
- Gupta, K., & Maksy, M.M. (2019). Factors associated with student performance in investment portfolio management: An empirical study at a US residential public university. *Journal of Accounting and Finance*, 19(2), 56–84.
- Hao, Q., & Maksy, M.M. (2019). Factors associated with student performance in advanced accounting: An empirical study at a US residential public university. *Journal of Accounting and Finance*, 19(4), 62–80.
- Kukreja, G., & Aali, M.H. (2013). The determinants of students' performance in introductory accounting courses: Evidence from Kingdom of Bahrain. *Journal of Emerging Issues in Economics, Finance and Banking*, 1(3), 183–201.
- Lane, A., & Porch, M. (2002). The impact of background factors on the performance of no specialist undergraduate students on accounting modules – A longitudinal study: A research note. *Accounting Education*, 11(1), 109–118.
- Leshchinskii, D., & Maksy, M.M. (2019). Factors associated with student performance in finance electives: An empirical study at a US private college. *Journal of Applied Business and Economics*, 21(7), 53–72.
- Lynn, S.A., & Robinson-Backmon, I. (2005). Course-level outcomes assessment: An investigation of an upper-division undergraduate accounting course and the factors that influence learning outcomes. *Journal of Accounting and Finance Research*, 13(4), 133–140.

- Maksy, M.M. (2012). Major factors associated with the performance of students taking undergraduate accounting courses at the upper level. *International Journal of Business, Accounting, and Finance*, 6(2), 1–19.
- Maksy, M.M. (2014). Factors associated with student performance in intermediate accounting: A comparative study at commuter and residential schools. *Journal of Applied Business and Economics*, 16(5), 86–104.
- Maksy, M.M. (2017). Factors associated with student performance in advanced accounting: An empirical study at a commuter university. *Journal of Applied Business and Economics*, 19(9), 42–59.
- Maksy, M.M., & Rezvanian, R. (2017). Factors associated with student performance in introductory finance: An empirical study at a public university. *Journal of International Business Education*, 12, 127–154.
- Maksy, M.M., & Rodriguez, C. (2018). Factors associated with student performance in managerial accounting: An empirical study at a New England public university. *Journal of Applied Business and Economics*, 20(7), 102–125.
- Maksy, M.M., & Wagaman, D.D. (2012). Factors associated with student performance in auditing: A comparative study in commuter and residential schools. *Journal of Accounting and Finance*, 12(2), 120–141.
- Maksy, M.M., & Wagaman, D.D. (2013). Factors associated with student performance in the undergraduate senior seminar in accounting: A comparative study in commuter and residential schools. *Journal of Applied Business and Economics*, 14(4), 101–119.
- Maksy, M.M., & Wagaman, D.D. (2015). Factors associated with student performance in advanced accounting: A comparative study at commuter and residential schools. *Journal of Accounting and Finance*, 15(1), 72–94.
- Maksy, M.M., & Zheng, L. (2008). Factors associated with student performance in advanced accounting and auditing: An empirical study in a public university. *Accounting Research Journal*, 21(1), 16–32.
- Mo, S., & Waples, E. (2015). An exploratory study on the interrelationships in course performance of accounting majors. *International Journal of Education Research*, 10(2), 73–82.
- Rich, S.P. (2006). Student performance: does effort matter? *Journal of Applied Finance*, 16(2), 120–133.
- Rodrigues, L.L., Pinho, C., Bugarim, M.C., Craig, R., & Machado, D. (2018). Factors affecting success in the professional entry exam for accountants in Brazil. *Accounting Education*, 27(1), 48–71.
- Rohde, F.H., & Kavanagh, M. (1996). Performance in first year university accounting: Quantifying the advantage of secondary school accounting. *Accounting and Finance*, 36(2), 275–285.
- Schleifer, L., & Dull, R. (2009). Metacognition and performance in the accounting classroom. *Issues in Accounting Education*, 24(3), 339–367.
- Schroeder, N.W. (1986). Previous accounting education and college-level accounting examination performance. *Issues in Accounting Education*, 1(1), 37–47.
- Schrouder, S.M., & Rhodd, R.G. (2013). Non-intellectual variables as factors in determining academic success - are older students likely to be more successful? *International Journal of Education and Research*, 1(6), 1–12.
- Seow, P.S., Pan, G., & Tay, J. (2014). Revisiting the determinants of students' performance in an undergraduate accountancy degree program in Singapore. *Global Perspectives on Accounting Education*, 11(1), 1–23.
- Tessema, M.T., Ready, K.J., & Stani, M.A. (2014). Does part-time job affects college students' satisfaction and academic performance (GPA)? The case of a mid-sized public university. *International Journal of Business Administration*, 5(2), 50–59.
- Tickell, G., & Smyrnios, K. (2005). Predictors of tertiary accounting students' academic performance: A comparison of year 12-to-university students with TAFE-to-university students. *Journal of Higher Education Policy and Management*, 27(2), 239–259.

APPENDIX 1

FORMAL STATEMENTS OF STUDY HYPOTHESES

Motivation Factors

H₁: There is a significant positive association between the grade the student intends to earn in the BDM&IS course and student performance in that course.

H₂: There is a significant positive association between the student's intention to attend graduate school and student performance in the BDM&IS course.

H₃: There is a significant positive association between the student's intention to obtain a professional certificate and student performance in the BDM&IS course.

Distraction Factors

H₄: There is a significant negative association between the student's average number of hours of work per week and student performance in the BDM&IS course.

H₅: There is a significant negative association between the student's work type (if it is not related to business in general) and student performance in the BDM&IS course.

H₆: There is a significant negative association between the number of semester courses a student is taking and that student's performance in the BDM&IS course.

Self-Perceived Ability Factors

H₇: There is a significant positive association between the student's self-reported reading ability and student performance in the BDM&IS course.

H₈: There is a significant positive association between the student's self-reported writing ability and student performance in the BDM&IS course.

H₉: There is a significant positive association between the student's self-reported listening ability and student performance in the BDM&IS course.

Prior Ability Factors

H₁₀: There is a significant positive association between the grade the student earned in the Applied Statistics course and student performance in the BDM&IS course.

H₁₁: There is a significant positive association between the student's overall GPA and student performance in the BDM&IS course.

Other Factors

H₁₂: There is no significant association between the student's gender and student performance in the BDM&IS course.

H₁₃: There is no significant association between the student's age and student performance in the BDM&IS course.

APPENDIX 2

**TABLE 1
DESCRIPTIVE STATISTICS OF THE STUDY VARIABLES**

	N	Minimum	Maximum	Mean	Std. Deviation
Letter Grade ¹	95	0.00	4.00	3.37	0.86
Overall Points (in %)	95	4.8	98.1	86.79	13.74
Intended Grade ²	95	2	4	3.53	0.58
Intended Grad Sch ³	95	0	2	.75	0.70
Intended Prof. Cert. ³	95	0	2	1.32	0.72
Work Hours/week	95	0	45	11.12	12.88
Work Type ⁴	95	0	6	1.15	1.54
Course Load	95	2	7	5.02	0.64
Reading Ability ⁵	94	2	5	4.21	0.67
Writing Ability ⁵	94	1	5	3.90	0.83
Listening Ability ⁵	94	1	5	4.09	0.79
MATH 140 Grade ⁶	75	2	4	3.22	0.56
OGPA (out of 4.0)	80	2	4	3.25	0.47
Gender ⁷	95	1	3	1.65	0.50
Age ⁸	95	2	5	2.09	0.41

¹A = 4.00; A- = 3.67; B+ = 3.33; B = 3.00; B- = 2.67; C = 2.00; D = 1.00; F = 0.00.

²An A = 4.00; At least a B = 3.00; At least a C =2; D is fine with me = 1.00

³No = 0; Maybe = 1; Yes = 2

⁴Business Data Analysis=6; Information Systems=5; Accounting=4; Finance=3; Business but none of the above=2; Non-business-related=1; I do not work=0.

⁵Excellent= 5; Very Good =4; Good =3; Average =2; Poor =1.

⁶A = 4; B = 3; C = 2; D =1.

⁷Male = 1; Female = 2; Do not wish to reveal =3.

⁸Under 18 =1; 18-22 = 2; 23-27 = 3; 28+ = 4; Do not wish to reveal or left blank =5

TABLE 2
ONE-WAY ANALYSIS OF VARIANCE
(ALL NUMBERS ARE FOR BETWEEN GROUPS ONLY)

		Dependent Variables			
		Letter Grade		Overall Points %	
Independent Variables	DF	F Value	Sig.	F Value	Sig.
Intended Gr	2/92	1.200	.306	.334	.717
Grad School	2/92	0.152	.859	0.721	.489
Prof. Cert	2/92	3.381	.038**	1.916	.153
Work Hours	24/70	0.446	.985	0.178	1.000
Work Type	6/88	1.080	.381	0.954	.461
Course Load	4/90	0.222	.925	0.080	.988
Reading	3/90	.425	.735	0.106	.956
Writing	4/89	2.118	.085*	1.847	.127
Listening	4/89	0.850	.497	0.783	.539
MATH 140 Gr	6/68	1.559	.173	.912	.492
OGPA	32/47	1.673	.053*	1.828	.029**
Gender	2/92	0.601	.550	1.584	.211
Age	3/91	0.258	.855	0.120	.948

* Statistically significant at the 10% level (two-tailed test)

**Statistically significant at the 5% level (two-tailed test)

***Statistically significant at the 1% level (two-tailed test)

TABLE 3
PEARSON/SPEARMAN CORRELATION COEFFICIENTS^a

	Letter Grade	Points	Intend Gr	Grad Sch	Prof Cert	Work Hrs	Work Type	Course Load	Reading	Writing	Listening	MATH 140 Gr.	OGPA	Gender	Age
Letter Gr		.877***	-.031	-.003	-.069	-.064	-.017	.083	-.041	-.086	.065	.228**	.429***	.102	.020
Points	.893***		-.053	.089	.012	-.007	.024	-.019	-.041	-.140	.062	.191	.366***	.182*	.052
Intend Gr	.010	.096		.121	.005	.210**	.103	.143	.071	.015	.090	.313***	.364***	-.060	.056
Grad Sch	-.031	.000	.092		.266***	-.055	-.044	-.084	.071	-.005	.001	.134	.094	-.041	.047
Prof Cert	-.118	-.110	.029	.280***		.053	.054	.125	0.063	.122	.010	-.070	-.018	.220**	.184*
Work Hrs	-.103	-.030	.227**	.029	-.025		.317***	.257**	-.137	-.061	-.134	.103	.125	.091	-.020
Work Type	-.025	.077	.133	-.036	-.017	.686***		.008	-.117	.029	-.038	-.084	.133	-.099	-.139
Course Load	.107	.091	.151	-.124	.190*	-.144	-.039		.264***	.150	.277***	.000	.379***	.090	.290***
Reading	-.083	.053	.043	.105	.082	-.080	-.180*	.126	3	.501***	.456***	.032	.134	-.071	-.128
Writing	-.127	-.127	.008	-.007	.171*	.006	.003	-.003	.444***		.260**	-.149	.073	-.158	-.200*
Listening	.068	.088	.077	.016	.023	-.103	-.170	.187*	.481**	.230**		.090	.121	-.090	-.120
MATH 140 Gr.	.268**	.275**	.301***	.182	-.031	.082	-.014	.012	.051	-.176	.071		.497***	.015	.084
OGPA	.430***	.471***	.387***	.110	-.007	.188*	.208	.289***	.102	-.022	.044	.546***		-.087	-.260**
Gender	-.022	.005	.001	-.036	.197*	.056	-.013	.141	-.080	-.164	-.062	.002	-.087		.006
Age	-.065	-.004	.057	.056	.195*	-.131	-.223**	-.034	.065	-.013	.013	.070	-.127	-.093	

^aPearson correlations are above the diagonal and Spearman correlations are below the diagonal.

* Statistically significant at the 10% level (two-tailed test)

**Statistically significant at the 5% level (two-tailed test)

***Statistically significant at the 1% level (two-tailed test)

TABLE 4
PARTIAL CORRELATION COEFFICIENTS
(CONTROLLING FOR PRIOR ABILITY FACTORS: MATH 140 AND OGPA)

	Letter Grade	Points	Intend Gr	Grad Sch	Prof Cert	Work Hrs	Work Type	Course Load	Reading	Writing	Listening	Gender	Age
Letter Gr	1												
Points	.858***	1											
Intend Gr	-.231*	-.168	1										
Grad Sch	-.086	-.003	.152	1									
Prof Cert	-.125	-.106	.133	.275**	1								
Work Hrs	-.190	-.034	.160	.166	.186	1							
Work Type	-.038	.065	.082	-.030	.109	.277**	1						
Course Load	.113	-.049	-.029	-.083	.142	-.182	-.089	1					
Reading	-.072	.001	.080	.107	.081	-.117	-.107	.169	1				
Writing	-.042	-.097	-.030	-.019	.246**	-.017	.005	.015	.423**	1			
Listening	-.061	-.089	.056	.044	.070	-.227*	-.012	.283**	.511**		1		
Gender	.166	.209*	-.039	-.126	.248**	.161	-.089	.157	.073	-.115	-.039	1	
Age	-.071	.031	.141	-.054	.171	-.170	-.113	.137	.230*	.164	.072	.118	1

* Statistically significant at the 10% level (two-tailed test)

** Statistically significant at the 5% level (two-tailed test)

*** Statistically significant at the 1% level (two-tailed test)

TABLE 5
REGRESSION ANALYSIS
(ALL NUMBERS ARE FOR 94 OBSERVATIONS)

Independent Variables	Dependent Variables			
	Letter Grade		Overall Points (%)	
	β (Reg. Coeff.)	Sig.	β (Reg. Coeff.)	Sig.
Constant	.577	0.566	2.785	0.007***
Intend. Gr	-1.882	0.063*	-1.701	0.093*
Grad Sch	.028	0.977	.728	0.469
Prof. Cert	-.815	0.418	-.248	0.805
Work Hours	-1.029	0.306	-.961	0.339
Work Type	.028	0.978	.495	0.622
Course Load	-.579	0.564	-1.689	0.095*
Reading	.776	0.440	-.285	0.776
Writing	-.358	0.721	-1.072	0.287

Listening	.984	0.328	1.345	0.182
MATH 140 Gr	.299	0.765	-.336	0.737
OGPA	4.521	.001***	4.560	0.001***
Gender	1.609	.111	2.424	0.018**
Age	.959	.340	.811	0.420
Adj. R ²	0.160		0.170	
F	2.373	0.010***	2.483	0.007***

* Statistically significant at the 10% level (two-tailed test)

**Statistically significant at the 5% level (two-tailed test)

***Statistically significant at the 1% level (two-tailed test)

TABLE 6
PARTIAL CORRELATION COEFFICIENTS OF SELECTED DISTRACTION FACTORS
WITH STUDENT PERFORMANCE^a

Part A					Part B				
Dependent Variable	Letter Grade		Overall Points %		Dependent Variable	Letter Grade		Overall Points %	
Distraction Factor	<i>Coef.</i>	<i>Sig.</i>	<i>Coef.</i>	<i>Sig.</i>	Distraction Factor	<i>Coef.</i>	<i>Sig.</i>	<i>Coef.</i>	<i>Sig.</i>
Work Hours	-.044	.675	-.021	.841	Worl Hours	-.172	.181	-.063	.629
Work Type	-.003	.980	.030	.776	Work Type	.018	.887	.076	.558
Course Load	.071	.502	-.024	.821	Course Load	.082	.529	-.033	.680

a Part A: While controlling for the other two distraction factors.

Part B: While controlling for the other two distraction factors and prior actual ability factors (MATH 140 & OGPA)

TABLE 7
DISTRIBUTION OF FINAL GRADES BY GENDER AND AVERAGE GPA

Course Grade	Male (n)	Female (n)	% Male	% Female
A	20	29	58.8%	48.3%
B	6	27	17.7%	45.0%
C	5	3	14.7%	5.0%
D	1	1	2.9%	1.7%
F	2	0	5.9%	0.0%
TOTAL	34	60	100%	100%

Note. Percentages are row percentages within each gender.

Average GPA (Male): 3.21 Average GPA (Female): 3.40