

Factors Associated with Student Performance in Advanced Accounting: A Comparative Study at Commuter and Residential Schools

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Of the motivation factors, the grade the student intends to earn had strong association and intention to take the CPA exam or attend graduate school had weak to moderate associations with student performance at both types of schools. Of the self-perceived abilities, writing and math had no associations, reading had weak association, and listening had strong associations with student performance at both types of schools. Intermediate Accounting II grade and GPA are strong predictors of student performance, particularly at the residential school. Surprisingly, work hours, job type, and course loads have no significant negative effects on student performance. Actually, there is strong evidence that higher course loads improve student performance at the residential school.

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. It is widely believed that motivation and effort significantly influence individual performance in college. However, as the review of prior research below indicates, few studies have investigated their impact on accounting education. This study investigates the associations between some selected motivation and distraction factors and student performance in the undergraduate Advanced Accounting course. The study also investigates whether students' self-perceived abilities (such as writing, math, reading and listening) have any associations with their performance in this course. Maksy (2012) investigated student performance in the Intermediate Accounting course at a commuter university. One of the limitations of Maksy's study was that the study was conducted at a commuter school. He stated "we do not know whether the results will be the same for residential schools." One of the suggestions for future research was to replicate the study at a residential school. In this study, not only the study is replicated at a residential school but also new data are collected from students at a commuter school of similar characteristics to those of the residential school to determine whether factors affecting student performance at commuter schools are generalizable to residential schools. As proxies for motivation, the study uses a variety of factors: the grade the students intend to earn in the course, intention to take the Certified Public Accountant (CPA) examination, and intention to pursue graduate studies. As proxies for distraction, the study uses the number of work hours per week, the type of job (especially if it is not

related to accounting or business), and the number of courses taken per semester. To control for prior actual ability, the study uses two other factors: the grades earned in Intermediate Accounting II and overall Grade Point Average. Student performance, the dependent variable, is measured once by the letter grade and another time by the total points earned in the course.

The study's objectives are predicated on the assumption that identifying some factors that motivate students to perform well and some factors that distract them from performing well may help us to emphasize the motivation factors and discourage the distraction factors. For example, if educators know that student intention to sit for the CPA exam motivates students to study hard and earn higher grades in the Advanced Accounting course, during advising, educators may encourage their students to plan to sit for the CPA exam. Also, if educators know that the type of job (especially if it is not related to accounting) does not have a negative effect on student performance, they may not discourage their students to have non-accounting-related jobs. Similarly, if working too many hours (within a relevant range of, let us say, 0 to 40 hours a week) does not have a negative effect on student performance, educators may not advise students that have low grades that they must reduce their work hours per week. Educators may advise their students to make sure, regardless of how many hours they work per week, to devote sufficient time to their study and to make sure that they are using good study habits. Of course, some students heed their educators' advice and some do not. Educators have no control over that.

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

LITERATURE REVIEW

Many prior studies have explored various factors (e.g., general academic performance, aptitude, prior exposure to mathematics, prior exposure to accounting, motivation, effort, and other intervening variables) that are associated with student performance in college-level courses. The Grade Point Average (GPA) is used frequently as a proxy for prior academic performance and aptitude. Several researchers, using US data, find evidence supporting GPA as a significant predictor of performance in accounting courses (Eckel and Johnson 1983; Hicks and Richardson 1984; Ingram and Peterson 1987; Eskew and Faley 1988; Doran et al. 1991, and Maksy and Zheng 2010). Wooten (1998) finds that aptitude is a significant variable in influencing performance of the traditional students in introductory accounting. In contrast, he finds that current performance of nontraditional students does not seem contingent on previous academic success. Maksy and Zheng (2008) find that the grade in Intermediate Accounting II is a strong predictor of student performance in the Advanced Accounting and Auditing courses. The research findings in the US are supported in Australia by Jackling and Anderson (1998) and in Scotland by Duff (2004). In Wales, Lane and Porch (2002) find that, in introductory accounting, performance can partially be explained by reference to factors in the students' pre-university background. However, these factors are not significant when the student progresses to upper level accounting classes. In addition, using another measure, pre-university examination performance, Gist, et al. (1996) find no significant association between academic performance and performance in accounting courses at the university level.

Because accounting is a subject area that requires accumulation of prior knowledge and considerable quantitative skills, several studies have investigated the impact of prior exposure to mathematical background and accounting courses on performance in college accounting courses. The results are inconclusive. On the one hand, some studies (for example, Baldwin and Howe 1982; Bergin 1983; and Schroeder 1986) find that performance is not significantly associated with prior exposure to high school accounting education. On the other hand, some later studies (for example, Eskew and Faley 1988; Bartlett et al. 1993; Gul and Fong 1993; Tho 1994; Rohde and Kavanagh 1996) find that prior accounting knowledge, obtained through high school education, is a significant determinant of performance in college-level accounting courses. Ambiguity is also present with respect to the influence of mathematical background on performance in accounting courses. For example, Eskew and Faley (1988) and Gul and Fong (1993) suggest that students with strong mathematical backgrounds outperform students with

weaker mathematical backgrounds. By contrast, Gist et al. (1996) do not report the same results. Additionally, Guney (2009) suggests that grades in secondary education mathematics are a very strong determinant of performance in accounting but only for non-accounting majors.

Bartlett et al. (1993) concluded that very few educational, demographic or financial characteristics variables appear to have a significant influence on student performance in university accounting examinations. Gracia and Jenkins (2003) observe that students who actively demonstrate commitment and self-responsibility towards their studies tend to do well in formal assessments. Accordingly, they agree with Bartlett et al. (1993) that intervening variables, rather than demographic variables, may be important determinants of student performance in university accounting examinations. They are also in agreement with Lane and Porch (2002) who suggest that other important factors like student motivation may explain student performance.

The influence of motivation and effort on student performance has been studied. Pascarella and Terenzini (1991) report that motivation and effort, among other factors, significantly influence individual performance in college. However, using self-reported data, Didia and Hasnat (1998) present counter-intuitive evidence that the more time spent studying per week, the lower the grade in the introductory finance course. However, the significance of this counter-intuitive result was at the weakest level (.10), appeared in only one of the four models they used, and most likely was due to the fact that they did not control for prior actual ability (i.e. GPA) even though it was one of their study variables. In this study, two prior actual ability factors (GPA and the Grade in Intermediate Accounting I) are used for control purposes. Also, using self-reported data, Nofsinger and Petry (1999) find no significant relationship between effort and performance. In contrast, Johnson et al.(2002) utilize computerized quizzes and analyze the effect of objectively measured effort on student performance. Their evidence shows that, after controlling for aptitude, ability, and gender, effort remains significant in explaining the differences in performance. Additionally, Maksy and Zheng (2008) find that the grade the student intends to earn (which they used as a proxy for motivation) in Advanced Accounting and Auditing courses is significantly associated with the student's performance in those two courses.

In recent years, there has been increased interest in studying the influence of intervening variables on student performance. Paisey and Paisey (2004) and Guney (2009) show there is a clear positive relationship between attendance and academic performance. Paisey and Paisey also report that the most frequently cited reason for not attending classes was students' participation in part-time employment. Similarly, Lynn and Robinson-Backmon (2005) find a significant adverse association between employment status and learning outcomes. These authors also indicate that a student's self-assessment of course learning objectives is significantly and directly related to grade performance. In contrast, Maksy and Zheng (2008) find no significant negative association between the number of hours of work per week and student performance in Advanced Accounting and Auditing courses. 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 and for problem solving.

Despite the fact that prior research has been largely inconclusive or replete with conflicting results, it is not the objective of this study to resolve this diversity of results. The literature review is conducted to show what was done in the past in relation to student performance and to make sure that this study does not repeat a prior study but adds to what was done. The hope, in this study, is to provide more insight on those areas in which there was general agreement. Since motivation and effort has generally been positively associated with student performance, this study tries to test whether some new selected motivation factors affect student performance. The study also looks at several factors which are commonly viewed as possibly distracting students from performing well and tests whether indeed they are negatively affecting student performance. Moreover, 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 and distraction factors and student performance in the Advanced Accounting course.

STUDY OBJECTIVES AND HYPOTHESES DEVELOPMENT

The *first objective* of the study is to investigate the association between three selected motivation factors (the grade the student intends to earn in the course, the student's intention to take the CPA examination, and the student's intention to attend graduate school) and the student's performance in the Advanced Accounting course in a commuter school and a residential school to determine if the results are generalizable to both types of schools. Commuter schools are those that do not have any organized on-campus housing for the students. Students live at their privately-owned or rented housing and commute to school using public transportation (trains and/or busses) or their private vehicles. At residential schools, a majority of the students live in organized housing on campus (university-owned dormitories) or in private housing (surrounding the campus) that is approved by the university housing administration. Students walk to the classrooms and do not use any public or private transportation.

Student performance is measured in two ways: (1) the letter "grade" and (2) the total "points" (including quizzes, mid-term exams, term projects and the final exam before any upward curving made by the faculty) earned in the course. A significant association is expected between each of these motivation factors and student performance in the Advanced Accounting course whether students attend a commuter or a residential school. The students were asked "what grade do you intend to earn in this course?" A student whose answer is "an A" is assumed to be motivated (for whatever reasons) to study hard to earn an A. Also, a student whose answer is "at least a B" is motivated but not as strongly as a student whose answer is "an A." On the other hand, a student whose answer is "a C is fine with me" appears to be not that motivated at all. With respect to the second motivation variable, the assumption is that students who intend to sit for the CPA examination are more motivated (to study hard to be able to pass that exam) than students who do not intend to sit for the CPA exam. Similarly, for the third motivation variable, the assumption is that students who intend to pursue graduate studies are more motivated (to study hard to be able to get accepted at a good graduate school) than students who do not intend to pursue graduate studies.

The *second objective* of the study is to investigate the association between three selected distraction factors (the student's number of working hours per week, the student's type of job if it is unrelated to accounting or business, and the student's number of courses taken per semester) and the student performance. The assumption is that if the number of work hours per week is too high, the student will not have enough hours to devote to the study of the Advanced Accounting course (as well as the other courses the student is taking) and, thus, the student's performance in this course will suffer, i.e., it will be lower than if the student was not working that many hours or was not working at all. It is also assumed that if the student's job is related to accounting the student may gain some practical accounting experience that might compensate for the fact that the student is not devoting enough hours to his or her study. In this case, the student's performance may not be affected negatively as when the student's job type is not related to accounting at all. Furthermore, it is assumed that if the student is taking too many courses (i.e., more than the usual average number of courses per semester) the student's performance in these courses (including the Advanced Accounting course) will be affected negatively because the student will not be able to devote the appropriate number of hours of study for each course. In light of the above discussion, it is expected that if the student's number of work hours per week is too high, and/or the type of the student's job is not related to accounting, and/or the number of courses taken per semester is too high, there will be a significant *negative* association between each of these distraction factors and student performance. Of course, distraction factors may offset each other, thereby cancelling out any single factor's effect. For example, a student who works too many hours per week may take fewer courses, and vice versa, so that there is no negative effect on performance. Similarly, residential school students may work less hours per week but take more courses each semester, while commuter school students may work more hours per week and take fewer courses per semester. For this reason, the study will test the effect of each distraction factor on student performance while once controlling for the other two factors and another time controlling for the other two factors as well as the prior actual ability factors (the grade in Intermediate Accounting II and overall GPA).

The *third objective* of the study is to investigate whether students make reasonably accurate evaluations of their writing, math, reading, and listening abilities. If they make reasonably accurate evaluations of these abilities, we would expect positive and significant associations between these abilities and students' performance in the Advanced Accounting course. On the other hand, if there are no positive and significant associations between these abilities and students' performance, this would indicate that students do not make reasonably accurate evaluations of their abilities. In this case, instructors need to continuously give the students feedback about their performance in the course throughout the semester, so students can self-improve. Without such feedback, it can be argued that most students will over-estimate their own abilities in these areas and rate them as either "good" or "very good" rather than "average" or "poor." The instructors teaching the Advanced Accounting courses at both schools have informed the authors that they give students feedback about their writing and math abilities but not about their reading or listening abilities. In light of that, it is expected that there will be significant associations between students' writing and math abilities but no significant associations between students' reading and listening abilities and their performance.

As indicated in the literature review above, almost all prior studies showed positive and significant associations between prior ability factors (most commonly GPA) and student performance in college courses. This is expected to be the case in this study as well. With regard to all three objectives of this study, *two prior actual ability factors* (the student's grade in Intermediate Accounting II and the student's overall GPA) are used to control their impact on student performance in the Advanced Accounting course. Based on the above discussion, the following hypotheses may be formulated:

Motivation Factors

H₁: There is a significant association between the grade the student intends to earn and student performance. This is the case whether the student attends a commuter or a residential school.

H₂: There is a significant association between the student's intention to take the CPA Exam and student performance. This is the case whether the student attends a commuter or a residential school.

H₃: There is a significant association between the student's intention to attend graduate school and student performance. This is the case whether the student attends a commuter or a residential school.

Distraction Factors

H₄: There is a significant negative association between the student's number of work hours per week and student performance. This is the case whether the student attends a commuter or a residential school.

H₅: There is a significant negative association between the student's job type (if it is not related to accounting) and student performance. This is the case whether the student attends a commuter or a residential school.

H₆: There is a significant negative association between the student's number of courses taken per semester and student performance. This is the case whether the student attends a commuter or a residential school.

Self-Perceived Ability Factors

H₇: There is a significant association between the student's self-perceived writing ability and student performance in the Advanced Accounting course. This is the case whether the student attends a commuter or a residential school.

H₈: There is a significant association between the student's self-perceived math ability and student performance in the Advanced Accounting course. This is the case whether the student attends a commuter or a residential school.

H₉: There is a significant negative association between the student's self-perceived reading ability and student performance in the Advanced Accounting course. This is the case whether the student attends a commuter or a residential school.

H₁₀: There is a significant negative association between the student's self-perceived listening ability and student performance in the Advanced Accounting course. This is the case whether the student attends a commuter or a residential school.

Control Factors:

H₁₁: There is a significant association between the grade the student earned in Intermediate Accounting II and student performance. This is the case whether the student attends a commuter or a residential school.

H₁₂: There is a significant association between the student's overall GPA and student performance. This is the case whether the student attends a commuter or a residential school.

METHODOLOGY

Survey Questionnaire

A list of survey questions, from Ingram et al. (2002), was modified to include, besides the study variables, some demographic and other information, and distributed it to students in the Advanced Accounting course at a commuter school and a residential school. For ethical, confidentiality, and potential risk issues pertaining to participants, the authors had to submit a comprehensive 10-page application (together with a copy of the survey instrument) to the University's Institutional Review Board (IRB) for approval. Prior to that, the authors had to take the National Institute of Health (NIH)'s training course titled "Protecting Human Research Participants," and pass the test given at the end of the course. The certificate of completion of the course was required to be submitted with the application to the University's IRB. The University's IRB required the authors to include the statement "participation in the survey is completely voluntary" in the survey instructions.

Data Collection and Measurement of Variables

The data on the survey questionnaire were collected from *all of the 99* students enrolled in the Advanced Accounting course at a commuter school and *all of the 68* students enrolled in the same course at a residential school. Other than the fact that one school is a commuter school and the other is a residential one, the two schools selected are very similar in many respects. First, each school enrolls about 10,000 students, and the College of Business in each school enrolls about 1600 students. Second, both schools are public (or state-supported) universities where public access is a major part of their mission statements. According to the College Board, there are 502 four-year public universities (with enrollment greater than 2000 students) in the United States of America. Of these 502 universities, 246 are residential (most students live on campus) and 256 are commuter universities (See <https://bigfuture>.

collegeboard.org/college-search.) The College Board is a highly respected not-for-profit organization committed to excellence and equity in education in the US. The Board's mission is to connect students to college success and opportunity (See <http://about.collegeboard.org/>). Excluding the flagship state university of each of the 50 states (because of exceptionally large student body, high academic rigor, etc..) the two schools used in the study are representative of about 450 public universities in the U.S. Third, at both universities, faculty members are represented by a union that negotiates compensation and work conditions with the state on behalf of the faculty. With minor exceptions, each faculty member receives the same percent salary increase (if any) each year. Fourth, both universities are non-AACSB accredited but both are in the AACSB candidacy stage, i.e., both received a letter from the Association to Advance Collegiate Schools of Business (AACSB International) notifying them that their application for accreditation has met the minimum requirements and they are candidates for accreditation). Fifth, both universities are located either in or very near one of the largest cities in the United States. Thus, because of the major similarities between the two schools, it can be assumed that differences in the study results, if any, between the two schools should be largely attributed to the fact that one university is a commuter and the other is a residential school. The data was collected in fall 2010 from three sections of the Advanced Accounting course offered at the commuter school, and in spring 2011 from two sections of the same course offered at the residential school. All sections in both schools were taught by the same instructor and, thus, instructor's effect, if any, on the results at each school should not be a major concern. Because a small number of students failed to list their identification (ID) numbers on the questionnaire, their responses were excluded from the study. The final sample included 92 useful responses from the commuter school and 64 from the residential school. While all the data representing the independent variables are primary data, the data representing the control variables (student grades in Intermediate Accounting II and overall GPAs) were verified with the school records using only the students ID numbers (for confidentiality reasons) and with the permission of the Dean of the College of Business. The data representing the two dependent variables (the letter "grade" and total "points" received for the course) were obtained directly from the faculty teaching the course, again using only students ID numbers for confidentiality concerns.

Data Analysis

To test the hypotheses, the statistical methods used in this study are similar to those used in Maksy and Zheng (2008) which was similar to this study but was conducted at a commuter school only. The One-Way Analysis of Variance (ANOVA), and regression analysis are used to determine the potential associations between the 12 independent variables and the two dependent variables. Because the dependent variable "grade" is ordinal, the Spearman correlations non-parametric test is used to determine the potential associations between "grade" and the independent variables. The Pearson correlations test is used to determine the potential associations between "points" and the independent variables. To control for the prior actual ability factors, the grade earned in Intermediate Accounting II (GIA2) and the overall Grade Point Average (GPA), the partial correlations were used. Because the number of work hours (WH) per week, the job type (JT), and the course load (CLoad) per semester may offset the effect of each other on student performance, partial correlations were used to determine the association between student performance and WH while controlling for JT and CLoad. The same process was repeated to determine the association between student performance and JT while controlling for WH and CLoad, and the association between student performance and CLoad while controlling for WH and JT. Furthermore, the above three processes were repeated while controlling for GIA2 and GPA in addition to the two distraction factors.

RESULTS OF THE STUDY

TABLE 1 presents the ANOVA results using "grade" and TABLE 2 presents the ANOVA results using "points" as a measure of student performance. TABLE 3 presents Spearman correlations for "grade" and TABLE 4 presents Pearson correlations for "points." TABLE 5 presents partial correlations for "grade"

while controlling for GIA2 and GPA and TABLE 6 presents partial correlations for “points” while controlling for the same prior actual ability variables. TABLE 7 presents regression analysis of the 12 independent variables on “grade” and TABLE 8 presents regression analysis of the 12 independent variables on “points.” Part A of TABLE 9 presents partial correlations for each distraction factor with “grade” while controlling for the other two distraction factors and Part B presents partial correlations for each distraction factor with “grade” while controlling for the other two distraction factors as well as GIA2 and GPA. Part A of TABLE 10 presents partial correlations for each distraction factor with “points” while controlling for the other two distraction factors and Part B presents partial correlations for each distraction factor with “points” while controlling for the other two distraction factors as well as GIA2 and GPA...

The results of the study are analyzed below by the type of factors investigated.

Motivation Factors Associated with Student Performance

At the commuter school, as TABLES 1 to 8 indicate, of the three motivation variables discussed in H₁ to H₃, one variable, the grade the student intends to earn in the course, is significantly associated (at the .01 significance level) with student performance (defined as “grade” or as “points”) under all tests even after controlling for the prior actual ability factors (GIA2 and GPA). As TABLES 1 to 4 indicate, the second motivation variable, intention to take the CPA exam, is also significantly associated with student performance (but only when it is defined as “points” and only under the ANOVA test and at a lower significance level of .05). The third motivation variable, intention to attend graduate school, is significantly associated with student performance (at the .10 significance level when performance is defined as “grade” and at the .01 level when it is defined as “points”) only under the ANOVA tests.

At the residential school, as TABLES 1 to 8 indicate, of the three motivation variables discussed in H₁ to H₃, one variable, the grade the student intends to earn in the course, is significantly associated (at the .01 significance level) with student performance under all tests (except under the regression test when performance is defined as “grade” where the significant association is at the .05 level). After controlling for the prior actual ability factors (GIA2 and GPA) the association stayed at the .01 significance level when performance is defined as “points” but was reduced to the .05 level when performance is defined as “grade.” As TABLES 1 to 4 indicate, the second motivation variable, intention to take the CPA exam, is also significantly associated with student performance at the .01 significance level (under the ANOVA and correlation tests.) However, after controlling for the prior actual ability factors, the significant association under the correlation tests totally disappeared. The third motivation variable, intention to attend graduate school, is not significantly associated with student performance (however defined) under any test.

The above discussion indicates that the statistical analyses provide support to H₁ (that there is a significant association between the grade the student intends to earn and student performance) at both the commuter school and residential schools. The statistical analyses provide weak support to H₂ (that there is an association between the intention to take the CPA exam and student performance) but more so at the residential school than at the commuter school. The statistical analyses provide weak support to H₃ (that there is an association between the intention to go to graduate school and student performance) but only at the commuter school and only under the ANOVA tests.

Distraction Factors Associated with Student Performance

As TABLES 1-8 indicate, all three distraction factors have no significant negative associations (under any test) with student performance (however defined) at both the commuter and the residential schools. Surprisingly, there is a positive association (at the .01 significance level when student performance is defined as “points” and at the .05 level when it is defined as “grade”) between the course load and student performance but only at the residential school. This significant positive association persisted even after controlling for the other two distraction factors (work hours and job type). However, after controlling for the prior actual ability factors (GIA2 and GPA), this association totally disappeared when performance is defined as “grade” and was reduced to the .10 significance level when performance is defined as “points.”

In light of the above discussion, it can generally be stated that the statistical analyses provide support to H_4 to H_6 . Additionally, there is an indication that the students at the residential school who take more courses per semester will have better performance in the Advanced Accounting course than students who take fewer courses.

Self-Perceived Abilities Factors Associated with Student Performance

At both the commuter and residential schools, as TABLES 1 to 8 indicate, the self-perceived writing and math abilities have no significant association with student performance (however defined) under any test.

At the commuter school, as TABLES 2 and 8 indicate, the self-perceived reading ability has a weak significant association (at the .10 level) with student performance (but only under the ANOVA and regression tests and only when student performance is defined as “points.”) As TABLE 7 indicates, the regression test shows significant association (at the .05 level) between the listening ability and student performance when it is defined as “grade.” As TABLES 2 and 3 indicates, the self-perceived listening ability also has significant association (but only at the .10 level) with student performance under the ANOVA test, when performance is defined as “points, and under the correlation test, when performance is defined as “grade.” However, after controlling for the actual ability factors, that association totally disappeared.

At the residential school, as TABLES 3 and 4 indicate, the self-perceived reading ability has significant association with student performance (but only under the correlations tests) at the .05 significance level when performance is defined as “points” and at the .10 level when performance is defined as “grade.” These significant associations persisted even after controlling for prior actual ability factors. As TABLES 1 to 8 indicate, the self-perceived listening ability has significant association with student performance (however defined) under all tests. That association is more significant (at the .01 level) when performance is defined as “points” than when it is defined as “grade (at either the .05 or the .10 level.) These significant associations not only persisted but became more significant after controlling for prior actual ability factors.

In light of the above discussion, it can generally be stated that the statistical analyses do not provide support to H_7 to H_{10} .

Prior Actual Ability Factors Associated with Student Performance

At the commuter school, as TABLES 1-8 indicate, of the two variables representing prior actual ability, the GPA has significant associations, at the .01 level, with student performance (however defined) under all tests except the ANOVA test when student performance is defined as “grade.” The other variable, GIA2, does not have significant associations with student performance (however defined) under all tests with the exception of the Spearman correlation test that shows significant association (at the .05 level) with student performance defined as “grade.”

At the residential school, as TABLES 1-8 indicate, of the two variables representing prior actual ability, GIA2 has significant associations, at the .01 level, with student performance (however defined) under all tests without exception that the significance level is .05 under the regression test when performance is defined as “grade.” The other variable, GPA, also has significant associations with student performance (however defined) under the correlations and regression tests but not under the ANOVA tests. These associations are significant at the .01 level except under the regression test when performance is defined as “points” where the significant level is .10.

CONCLUSIONS AND RECOMMENDATIONS

One general conclusion of the study is that motivated students at both commuter and residential schools perform better in the Advanced Accounting course than students who are not motivated. More specifically, all tests used in the study provided strong evidence that the majority of students who responded that they intend to earn high grades in the Advanced Accounting course ended up earning high

grades. Speaking of motivation, intention to take the CPA examination and intention to pursue graduate studies do not seem, in this study, to be good motivating factors for either commuter or residential school students to perform well in the Advanced Accounting course. There is some evidence, under only one out of three types of statistical tests, that these two factors are motivating students to perform better.

In light of the above general conclusion, it is recommended that, while accounting faculty (at both types of schools) should find ways to motivate their students to study hard to earn high grades, they should keep in mind that informing students to plan to sit for the CPA exam or get admitted to a good graduate school may not be good motivating factors. Thus, accounting faculty should think of other motivating factors that are not tested in this study.

Another general conclusion of the study is that the distraction variables (i.e., working too many hours per week, working in non-accounting related jobs, and taking too many courses per semester) have no significant *negative* associations with student performance at either the commuter or residential school. That is, they are not distracting the students and preventing them from earning high grades in the Advanced Accounting course. Surprisingly, there is strong evidence that carrying a higher course load per semester lead to better student performance in the Advanced Accounting course at the residential school.

In light of this conclusion, it is recommended that accounting faculty, when advising their students, should realize that working as few hours as possible will not necessarily lead to earning higher grades and working too many hours (within a relevant range of, let us say, zero to 40 hours a week) will not necessarily lead to earning lower grades. So, faculty need not automatically advise students with lower grades to significantly reduce their work hours, especially if the students have to work anyway to support themselves and/or their families. This is so because lower working hours will not necessarily and automatically lead to higher grades since students may not automatically devote the extra time to studying or they may have wrong study habits that they need to fix. Furthermore, if students have to work a significant number of hours anyway (even in non-accounting related jobs) to support themselves and/or their families, accounting faculty need not encourage those students to take as few courses per semester as possible, because higher course loads do not seem to lead to lower grades in the Advanced Accounting course. On the contrary, there is evidence that higher course loads lead to higher grades at the residential school.

A third general conclusion of the study is that students at both the commuter and residential schools seem to over-estimate their own writing and math abilities and, to some degree, their reading abilities. More specifically, all tests used in the study show no significant associations whatsoever between students' rating of their writing and math abilities and their performance in the Advanced Accounting course. This may be due to the fact that students tend to overestimate their writing and math abilities because the feedback they receive on their performance on midterm exams and/or quizzes during the semester is not frequent. Some statistical tests show weak associations between students' rating of their reading abilities and their performance in the Advanced Accounting course. There is moderate evidence at the commuter school and strong evidence at the residential school of associations between students' rating of their listening abilities and their performance in the Advanced Accounting course. It is not quite clear why this is the case. No associations were expected between reading and, particularly, listening abilities and student performance because these abilities are not evaluated by the instructors and thus students will tend to over-estimate these abilities. It is possible that the results here are statistical anomaly. It is also possible that students with low performance in the course didn't over-estimate these abilities.

In light of this conclusion, it is recommended that the college of business faculty in general, and accounting faculty teaching the Advanced Accounting course in particular, should give continuous feedback to the students at least about their writing and quantitative abilities. This may require faculty, who usually give one or two mid-tem exam(s) in addition to the final exam, to think about giving short weekly quizzes to continuously evaluate student performance. If the class time devoted to these many quizzes is an issue, faculty may consider a combination of in-class and take-home quizzes, or perhaps use an on-line homework system that is now provided by many textbook publishers. It must be realized that some faculty may already be doing this; thus, these recommendations are for those who may not be.

As expected and as shown in prior studies with respect to other courses, a fourth general conclusion of the study is that students with high prior actual ability end up earning high grades in the Advanced Accounting course at both schools. Specifically, the study provides strong evidence that students' GPA and their performance in Intermediate Accounting II (particularly at the residential school), are strong predictors of their performance in the Advanced Accounting course.

STUDY LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

This study is subject to some limitations. One limitation is that the two schools selected for the study are public (i.e., state-owned or state-supported) universities and, therefore, the results may not be the same for private schools. There are about 430 four-year, for-profit, medium-size (enrollment between 2000-15000 students), private universities in the U.S. (see <https://bigfuture.collegeboard.org/college-search>). Thus, one suggestion for further research is to replicate the study using two private schools that are representative of the majority of private schools. Another limitation is that the study sample for the residential school is somewhat small relative to the number of variables analyzed and, hence, the results may not be as robust as they would have been if that sample was larger. Therefore, another suggestion for further research is to replicate the study using a somewhat larger sample for the residential school.

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TABLES

NOTE: Legend of Independent Variables in All Tables Below:

IG: Intended Grade (the grade the student intends to earn in the course).

ICPA: Intention to take the CPA exam.

IGS: Intention to attend Graduate School.

WH: Number of Work Hours per week.

JT: Job Type.

CLoad: Number of courses taken per semester.

Write: Student's self-perceived writing ability.

Math: Student's self-perceived math ability.

Read: Student's self-perceived reading ability.

Listen: Student's self-perceived listening ability.

GIA2: Grade in Intermediate Accounting II.

GPA: Overall GPA.

TABLE 1
ONE-WAY ANALYSIS OF VARIANCE FOR GRADE
(All numbers are for Between Groups Only)
Complete ANOVA Numbers are Available from the Authors upon Request

Panel A: Commuter School:

<u>Grade BY</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<u>F</u>	<u>Significance</u>
IG	10.625	2	5.313	9.437	.000
ICPA	2.672	2	1.336	2.024	.138
IGS	3.525	2	1.763	2.689	.074
WH	5.962	14	.426	.580	.872
JT	.882	3	.294	.420	.739
CLoad	3.900	5	.780	1.166	.333
Write	1.473	3	.491	.730	.537
Math	1.256	2	.628	.941	.394
Read	2.082	2	1.041	1.583	.211
Listen	2.895	3	.965	1.471	.228
GIA2	3.885	3	1.295	1.969	.125
GPA	25.501	24	1.063	2.040	.013

Panel B: Residential School:

<u>Grade BY</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<u>F</u>	<u>Significance</u>
IG	20.409	2	10.205	12.782	.000
ICPA	9.800	2	4.900	5.040	.009
IGS	3.282	2	1.641	1.521	.227
WH	20.067	18	1.115	1.023	.455
JT	.366	3	.122	.106	.956
CLoad	18.555	7	2.651	2.936	.011
Write	1.775	3	.592	.527	.665
Math	4.203	2	2.101	1.975	.148
Read	4.626	3	1.542	1.435	.242
Listen	9.411	3	3.137	3.153	.031
GIA2	29.127	4	7.282	10.745	.000
GPA	49.276	40	1.232	1.429	.183

TABLE 2
ONE-WAY ANALYSIS OF VARIANCE FOR POINTS
(All numbers are for Between Groups Only)
Complete ANOVA Numbers are Available from the Authors upon Request

Panel A: Commuter School:

<u>Grade BY</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<u>F</u>	<u>Significance</u>
IG	2046.339	2	1023.169	9.805	.000
ICPA	918.029	2	459.015	3.699	.029
IGS	1405.050	2	705.525	5.860	.004
WH	949.525	14	67.823	.473	.941
JT	241.214	3	80.405	.602	.615
CLoad	351.128	5	70.226	.519	.761
Write	336.414	3	112.138	.900	.444
Math	72.227	2	36.114	.286	.752
Read	576.119	2	288.059	2.392	.097
Listen	827.871	3	275.957	2.231	.081
GIA2	306.581	3	102.194	.765	.517
GPA	3388.947	24	141.206	1.092	.379

Panel B: Residential School:

<u>Grade BY</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<u>F</u>	<u>Significance</u>
IG	3957.779	2	1978.890	18.755	.000
ICPA	1820.616	2	910.308	6.477	.003
IGS	167.655	2	83.827	.500	.609
WH	3279.726	18	182.207	1.152	.338
JT	84.104	3	28.035	.163	.921
CLoad	4020.450	7	574.350	5.046	.000
Write	325.672	3	108.557	.647	.588
Math	318.683	2	159.341	.965	.387
Read	745.877	3	248.626	1.546	.212
Listen	2547.762	3	849.254	6.494	.001
GIA2	4305.913	4	1076.478	10.432	.000
GPA	6095.443	40	152.386	.815	.721

TABLE 3
SPEARMAN CORRELATION COEFFICIENTS FOR GRADE^a

Grade	IG	ICPA	IGS	WH	JT	CLoad	Write	Math	Read	Listen	GIA2	GPA
Grade	.408***	.116	-.041	.016	.071	.090	.027	.023	-.037	.199*	.208**	.499***
IG	.552***	.242**	.038	-.183	-.107	.195*	.023	.065	.014	.041	.164	.393***
ICPA	.349***	.472***	.380***	-.090	-.158	.254**	.120	.105	-.001	.134	.051	.121
IGS	.192	.277**	.134	-.241**	-.314***	.274***	.205*	.016	-.043	-.023	-.070	.031
WH	-.048	.056	-.067	-.065	.579***	-.425***	-.066	-.216**	-.090	.007	.029	-.103
JT	.006	-.019	-.030	-.058	.599***	-.328***	-.128	-.094	-.126	.028	.063	-.160
CLoad	.268**	.120	.070	-.076	.039	.004	.004	.092	-.040	-.114	-.014	.183*
Write	.138	.076	-.061	.298**	.231*	.051	.303**	.028	.466***	.151	.167	.368***
Math	.167	.218*	-.006	.055	.106	.113	.428***	.151	.345***	.152	.314***	.201*
Read	.218*	.113	.078	.141	.198	.075	.428***	.151	.642***	.165	.229**	.209*
Listen	.226*	.121	.007	.187	.168	-.017	.335***	.077	.068	.030	.140	.169
GIA2	.635***	.590***	.512***	-.072	-.098	.221*	-.079	.002	.055	.101	.332***	.427***
GPA	.536***	.206	.142	-.145	.131	.361***	.119	.126	.055	.101	.332***	.427***

***, **, * Indicate significances at .01, .05, and .10 levels respectively.

^a Commuter school coefficients are above the diagonal and residential school coefficients are under the diagonal.

TABLE 4
PEARSON CORRELATION COEFFICIENTS FOR POINTS^a

	<i>Points</i>	<i>IG</i>	<i>ICPA</i>	<i>IGS</i>	<i>WH</i>	<i>JT</i>	<i>CLoad</i>	<i>Write</i>	<i>Math</i>	<i>Read</i>	<i>Listen</i>	<i>GIA2</i>	<i>GPA</i>
Points		.419***	.120	-.007	.049	.088	.026	.106	.047	-.081	.157	.154	.425***
IG	.609***		.263**	.029	-.163	-.084	.169	.007	.072	-.015	.024	.164	.375***
ICPA	.410***	.466***		.363***	.048	-.107	.234**	.170	.093	.003	.136	.045	.148
IGS	.124	.284**	.121		-.188	-.298***	.265**	.219**	.037	-.024	-.018	-.077	.027
WH	-.009	.057	-.074	-.074		.603***	-.400***	-.056	-.231**	-.119	-.024	.025	-.112
JT	-.051	-.026	-.025	-.060	.520***		-.326***	-.135	-.121	-.144	.009	.062	-.160
CLoad	.384***	.149	.113	.199	-.109	.035		.010	.061	-.038	-.130	-.010	.164
Write	.058	.064	-.067	.095	.304**	.189	.047		.034	.434***	.156	.146	.357***
Math	.086	.166	-.022	.032	.050	.090	.056	.315**		.329***	.203*	.322***	.233**
Read	.248**	.112	.091	.055	.133	.177	.122	.416***	.158		.168	.241**	.177
Listen	.341***	.079	.079	-.096	.196	.177	-.007	.340*	.059	.642***		.170	.148
GIA2	.621***	.587***	.493***	.307**	-.082	-.133	.241*	-.083	-.043	.093	.023		.439***
GPA	.399***	.203	.195	.221*	-.175	.115	.406***	.084	.103	.033	.021	.343***	

***, **, * Indicate significances at .01, .05, and .10 levels respectively.

^a Commuter school coefficients are above the diagonal and residential school coefficients are under the diagonal.

TABLE 5
PARTIAL CORRELATION COEFFICIENTS FOR GRADE WHILE CONTROLLING FOR GIA1 AND GPA^a

<i>Grade</i>	<i>IG</i>	<i>ICPA</i>	<i>IGS</i>	<i>WH</i>	<i>JT</i>	<i>CLoad</i>	<i>Write</i>	<i>Math</i>	<i>Read</i>	<i>Listen</i>
Grade	.315***	.120	-.026	.168	.248**	-.062	-.196*	.094	-.246**	.163
IG	.313**	.216*	-.030	-.151	-.004	.130	-.128	.015	-.129	-.080
ICPA	.107	.251**	.333***	-.032	-.056	.220**	.126	.090	-.007	.149
IGS	-.095	.135	-.042	-.194*	-.268**	.268**	.224**	.070	-.013	-.063
WH	.058	.132	-.032	.600***	-.420***	.037	-.219*	-.068	-.068	-.062
JT	.018	.066	.043	-.044	-.371**	-.065	-.124	-.125	-.125	.037
CLoad	.182	.010	-.019	.097	.009	-.076	.068	-.055	-.055	-.161
Write	.177	.140	-.035	.113	.163	.029	-.064	.423***	.423***	.125
Math	.143	.238*	-.005	.032	.065	.026	.303**	.259**	.259**	.187*
Read	.239*	.071	.052	.028	.195	.110	.430***	.164	.164	.148
Listen	.328***	.081	.077	-.111	.182	-.019	.344***	.059	.643***	.643***

***, **, * Indicate significances at .01, .05, and .10 levels respectively.

^a Commuter school coefficients are above the diagonal and residential school coefficients are under the diagonal.

TABLE 6
PARTIAL CORRELATION COEFFICIENTS FOR POINTS WHILE CONTROLLING FOR GIA2 AND GPA^a

	<i>IG</i>	<i>ICPA</i>	<i>IGS</i>	<i>WH</i>	<i>JT</i>	<i>CLoad</i>	<i>Write</i>	<i>Math</i>	<i>Read</i>	<i>Listen</i>
Points	.323***	.074	-.062	.182	-.269**	-.149	-.051	-.075	-.241**	.110
IG	.397***	.216*	-.030	-.151	-.004	.130	-.128	.015	-.129	-.080
ICPA	.149	.251**	.333***	-.032	-.056	.220**	.126	.090	-.007	.149
IGS	-.127	-.042		-.194*	-.268**	.268**	.224**	.070	-.013	-.063
WH	.097	-.035	-.032		.600***	-.420***	-.037	-.219*	-.068	-.062
JT	-.003	.043	-.044	.558***		-.371***	-.065	-.124	-.125	.037
CLoad	.242*	-.019	.097	-.039	.009		-.076	.068	-.055	-.161
Write	.114	-.035	.113	.324***	.163	.029		-.064	.423***	.125
Math	.117	-.005	.032	.068	.065	.026	.303**		.259**	.187*
Read	.251**	.052	.028	.144	.195	.110	.430***	.164		.148
Listen	.427***	.077	-.111	.203	.182	-.019	.344***	.059	.643***	

***, **, * Indicate significances at .01, .05, and .10 levels respectively.

^a Commuter school coefficients are above the diagonal and residential school coefficients are under the diagonal.

TABLE 7
REGRESSION ANALYSIS FOR GRADE

Panel A: Commuter School

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-2.031	.806		-2.521	.014
IG	.347	.119	.286	2.905	.005
ICPA	.021	.144	.015	.147	.883
IGS	.085	.102	.082	.830	.410
WH	.007	.006	.123	1.052	.296
JT	.102	.094	.123	1.087	.281
CLoad	.005	.063	.008	.072	.942
Write	-.136	.104	-.140	-1.299	.198
Math	-.093	.127	-.072	-.729	.469
Read	-.111	.110	-.105	-1.006	.318
Listen	.239	.106	.210	2.250	.028
GIA2	.003	.088	.004	.039	.969
GPA	1.084	.220	.538	4.933	.000

a. Dependent Variable: Grade; Model Summary: R²: .505, adjusted R²: .419, ANOVA F value: 5.864 (Significant at .000)

Panel B: Residential School

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-2.136	.877		-2.434	.018
IG	.351	.160	.256	2.197	.033
ICPA	.019	.170	.012	.111	.912
IGS	-.130	.126	-.099	-1.032	.307
WH	-.001	.009	-.014	-.120	.905
JT	-.049	.117	-.045	-.415	.680
CLoad	.128	.081	.153	1.577	.121
Write	.052	.163	.034	.320	.750
Math	.060	.168	.034	.356	.724
Read	.002	.147	.001	.012	.990
Listen	.266	.153	.205	1.738	.088
GIA2	.305	.118	.321	2.592	.012
GPA	.629	.203	.330	3.100	.003

a. Dependent Variable: Grade; Model Summary: R²: .618, adjusted R²: .528, ANOVA F value: 6.873 (significant at .000)

TABLE 8
REGRESSION ANALYSIS FOR POINTS

Panel A: Commuter School

Model	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	17.374	12.025		1.445	.153
IG	5.495	1.784	.328	3.081	.003
ICPA	-.241	2.144	-.012	-.112	.911
IGS	.361	1.524	.025	.237	.813
WH	.069	.095	.091	.724	.471
JT	1.606	1.397	.140	1.149	.254
CLoad	-.602	.933	-.072	-.645	.521
Write	.803	1.559	.060	.515	.608
Math	-.007	1.899	.000	-.004	.997
Read	-2.957	1.643	-.203	-1.799	.076
Listen	2.155	1.582	.137	1.362	.178
GIA2	-.416	1.318	-.033	-.318	.753
GPA	11.647	3.282	.417	3.549	.001

a. Dependent Variable: Points; Model Summary: R²: .424, adjusted R²: .324, ANOVA F value: 4.229 (significant at .000)

Panel B: Residential School

Model	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	21.085	10.046		2.099	.041
IG	5.932	1.828	.354	3.246	.002
ICPA	.476	1.951	.024	.244	.808
IGS	-1.937	1.442	-.120	-1.343	.185
WH	.052	.103	.053	.506	.615
JT	-1.427	1.342	-.108	-1.063	.293
CLoad	2.343	.932	.228	2.514	.015
Write	-1.037	1.865	-.055	-.556	.581
Math	.545	1.920	.025	.284	.778
Read	-.554	1.688	-.037	-.329	.744
Listen	5.433	1.750	.341	3.104	.003
GIA2	3.581	1.346	.307	2.660	.010
GPA	3.974	2.322	.170	1.711	.093

a. Dependent Variable: Points; Model Summary: R²: .667, adjusted R²: .589, ANOVA F value: 8.513 (Significant at .000)

TABLE 9
PARTIAL CORRELATION COEFFICIENTS OF EACH
DISTRACTION FACTOR WITH GRADE^a

<i>Part A</i>		<i>Part B</i>						
<i>Grade</i>		<i>WH</i>	<i>JT</i>	<i>CLoad</i>				
Grade		.026	.097	.138	Grade	.040	.141	.089
WH	-.015				WH	.069		
JT	-.010				JT	-.024		
CLoad	.381***(.002)				CLoad	.186		

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

Part B: While controlling for the other two distraction factors as well as prior actual ability factors (GIA2 & GPA).

***, **, * Indicate significances at .01, .05, and .10 levels respectively. Exact significance level is in parenthesis.

^a Commuter school coefficients are above the diagonal and residential school coefficients are under the diagonal.

TABLE 10
PARTIAL CORRELATION COEFFICIENTS OF EACH
DISTRACTION FACTOR WITH POINTS^a

<i>Part A</i>		<i>Part B</i>					
<i>Points</i>	<i>WH</i>	<i>JT</i>	<i>CLoad</i>	<i>Points</i>	<i>WH</i>	<i>JT</i>	<i>CLoad</i>
Points	.031	.098	.074	Points	.022	.143	.020
WH	.085			WH	.136		
JT	-.104			JT	-.081		
CLoad	.394***(.002)			CLoad	.250* (.054)		

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

Part B: While controlling for the other two distraction factors as well as prior actual ability factors (GIA2 & GPA).

***, **, * Indicate significances at .01, .05, and .10 levels respectively. Exact significance level is in parenthesis.

^a Commuter school coefficients are above the diagonal and residential school coefficients are under the diagonal