Factors Associated with Student Performance in Upper Level Undergraduate Accounting Courses: An Empirical Comparative Study at Commuter and Residential Schools

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The grade the student intends to earn and intention to take the CPA exam are good motivating factors for students to improve performance at both schools but intention to attend graduate school motivates only commuter school students. GPA and Intermediate Accounting II grade are strong predictor of student performance at both schools, especially when student performance is defined as "grade" at the commuter 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 had* ***positive*** *effects on 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 upper-level accounting Courses 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 upper-level accounting courses, 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 upper-level accounting courses.

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 upper-level accounting courses 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 upper-level accounting courses 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 upper-level accounting courses (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 upper-level accounting courses) 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 upper-level accounting courses. 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 upper-level 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 upper-level accounting courses. Based on the above discussion, the following hypotheses may be formulated (in all hypotheses the authors anticipate no significant differences between the commuter school and the residential school):

Motivation Factors

H_1: There is a significant association between the grade the student intends to earn and student performance.

H_2: There is a significant association between the student's intention to take the CPA Exam and student performance.

H_3: There is a significant association between the student's intention to attend graduate school and student performance.

Distraction Factors

H_4: There is a significant negative association between the student's number of work hours per week and student performance.

H_5: There is a significant negative association between the student's job type (if it is not related to accounting) and student performance.

H_6: There is a significant negative association between the student's number of courses taken per semester and student performance.

Self-Perceived Ability Factors

H_7: There is a significant association between the student's self-perceived writing ability and student performance in the upper-level accounting courses.

H_8: There is a significant association between the student's self-perceived math ability and student performance in the upper-level accounting courses.

H_9: There is a significant negative association between the student's self-perceived reading ability and student performance in the upper-level accounting courses.

H_{10}: There is a significant negative association between the student's self-perceived listening ability and student performance in the upper-level accounting courses.

Control Factors

H_{11}: There is a significant association between the grade the student earned in Intermediate Accounting II and student performance.

H_{12}: There is a significant association between the student's overall GPA and student performance.

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 upper-level accounting courses 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* 219 students enrolled in the upper-level accounting courses at a commuter school and *all of the 139* 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 different sections of the upper-level accounting courses 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 215 useful responses from the commuter school and 137 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, 3 and 7 indicate, of the three motivation variables discussed in H_1 to H_3, the grade the student intends to earn in the course, is significantly associated (at the .01 level of significance) with student performance but only when it is defined as "grade." When performance is defined as "points" (which is a finer measurement than "grade") the association of this variable with student performance disappears. After controlling for GIA2 and GPA, the association of this variable with student performance (defined as "grade") is still significant but only at the .05 level. As TABLES 1 to 8 indicate, the second motivation variable, intention to take the CPA exam, is significantly associated with student performance however defined. However, unlike the first variable, the association is significant at the .01 level when performance is defined as "points" but when performance is defined as "grade" the significance level drops to .05 under the correlation tests and almost disappears (.104 level of significance) under the regression test. Interestingly, the significance of the association between this variable and student performance under the correlation tests rises up to .01. This seems to indicate that of

the students who have the same GPA and same grade in Intermediate Accounting II, those who are planning to take the CPA exam perform better in the upper level accounting courses beyond Intermediate II than those who do not plan to sit for the CPA exam. The third motivation variable, intention to attend graduate school, is significantly associated (at the .01 significance level) with student performance, when it is defined as "points" under the ANOVA and correlation tests but is not associated at all under the regression tests. This association remains significant at the .01 level even after we control for GIA2 and GPA. When student performance is defined as "grade" the ANOVA tests still show significance at the .01 level but the there is no association under the correlation or regression tests.

At the residential school, as TABLES 1 to 8 indicate, of the three motivation variables discussed in H_1 to H_3, the grade the student intends to earn in the course, is significantly associated (at the .01 significance level) with student performance, however defined, under all tests. This association remains significant at the .01 level even after we control for GIA2 and GPA. The second motivation variable, intention to take the CPA exam, is also significantly associated with student performance at the .01 significance level when performance is defined as "points" and at the .05 level when performance is defined as "grade" and these associations remain the same even after we control for GIA2 and GPA. 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 H_1, i.e., there is a significant association between the grade the student intends to earn and student performance (when it is defined as "grade" at the commuter school and as "grade" or "points" at the residential school.) The statistical analyses also provide support to H2, i.e., there is an association between the intention to take the CPA exam and student performance, however defined, at both types of schools. The statistical analyses provide weak support to H3: that there is an association between intention to go to graduate school and student performance, but only when performance is defined as "points", (only the ANOVA tests show association when performance is defined as "grade" but the regression tests do not show any association at all) and only at the commuter school.

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. At the commuter school, when we control for GIA2 and GPA, there is a positive association (at the .05 significance level when student performance is defined as "points") between the job type, when it is related to accounting, and student performance but only at the commuter school. When we controlled for the other two distraction factors (work hours and course load) as well, this significant positive association weakened to only .10 but a significant association, at the .05 level, appeared between job type and student performance defined as "grade." Surprisingly, there is a positive association (but only at the .10 significance level and only when student performance is defined as "points") between the course load and student performance at the residential school. However, this weak positive association disappeared after controlling for the prior actual ability factors (GIA2 and GPA). Interestingly, there is a positive association (at the .01 significance level under the ANOVA tests and under the Pearson correlation test, when student performance is defined as "points" and at the .10 level when performance is defined as "grade" under correlation test and as "points" under the regression test) between the course load and student performance at the residential school. This positive association disappeared after controlling for the prior actual ability factors (GIA2 and GPA). However, when we controlled for the other two distraction factors (work hours and job type) as well, the positive association reappeared very strongly at the .01 level of significance.

In light of the above discussion, it can generally be stated that the statistical analyses do not provide support to H_4 to H_6. Additionally, there is an indication that of the students at the residential school who work the same number of hours per week and have the same type of job, those who take more courses per semester perform better in the Upper level undergraduate accounting courses than students who take fewer courses.

Self-Perceived Abilities Factors Associated with Student Performance

At the commuter school, 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. Only one test (Spearman correlation) shows significant positive association (at the .05 level) between the writing ability and "grade" and when we control for GIA2 and GPA, we find significant *negative* association (at the .05 level) between the math ability and "points." This seems to indicate that students with weak performance in the three upper-level undergraduate courses investigated in this study significantly overestimate their math abilities. Also at the commuter school, the self-perceived reading ability has a moderate significant association (at the .05 level) with student performance (but only under the ANOVA test and only when student performance is defined as "points.") However, under the Pearson correlation test and the regression tests and also when we control for GIA2 and GPA the association between reading ability and student performance becomes significantly negative (at the .01 level in most cases.) 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." The self-perceived listening ability has significant association (at the .05 level) with student performance especially when it is defined as "grade". When performance is defined as "points" only the ANOVA test shows significant association but the correlation and regression tests do not. When we control for GIA2 and GPA, the association between listening ability and student performance defined as "grade" drops to the .10 significance level.

At the residential school, 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. The self-perceived reading ability has a moderate to weak significant association with student performance, especially when it is defined as "points." When performance is defined as "grade" the ANOVA and regression tests do not show any association, and the correlation test shows association weak association (at the .10 level). However, when we control for GIA2 and GPA, the association between reading ability and student performance become stronger (at the .01 level when performance is defined as "points" and at the .05 level when performance is defined as "grade.") As TABLES 1- 6 indicate, all tests (except the regression test) show significant association (at the .05 level when performance is defined as "grade" and at the .01 level when performance is defined as "points) between the listening ability and student performance. The only exception is that the Spearman correlation tests shows the association between listening ability and student performance defined as "grade" at only .10 significance level. However, when we control for GIA2 and GPA, that association gets much stronger to the .01 level of significance.

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_9 at the commuter school or to H_7 and H_8 at the residential school. The statistical analyses provide some support to H10 at the commuter school and to H_9 and H_{10} at the residential school.

Prior Actual Ability Factors Associated with Student Performance

At the commuter school, 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. The other variable, GIA2, does not have significant associations with student performance (however defined) with the exception of the ANOVA and Spearman correlation tests that show significant association (at the .01 level) with student performance defined as "grade."

At the residential school, both the two variables representing prior actual ability, GIA2 and GPA, have significant associations, at the .01 level, with student performance, however defined. The only exception is that the significance level is .05 under the ANOVA test 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_{11} and H_{12} at the residential school and only to H_{12} at the commuter school. The statistical analyses provide only limited support to H_{11} when student performance is defined only as "grade" and only under ANOVA and correlation tests.

CONCLUSIONS AND RECOMMENDATIONS

One general conclusion of the study is that motivated students at both commuter and residential schools perform better in the upper-level accounting courses 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 upper-level accounting courses ended up earning high grades. Speaking of motivation, intention to take the CPA examination does seem, in this study, to be a good motivating factor for both the commuter and residential school students to perform well in the upper-level accounting courses. There is some limited evidence that intention to attend graduate school is motivating students to perform well (especially when performance is defined as "points") but only under the ANOVA and correlations tests and only at the commuter school.

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. One of those ways could be encouraging them to plan to sit for the CPA exam. However, informing students to plan to get admitted to a good graduate school may not be a good motivating factor, especially at the residential school. 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 upper-level accounting courses. Surprisingly, there is some evidence that carrying a higher course load per semester is associated with better student performance in the upper-level accounting courses 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 upper-level accounting courses. 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 not being able to make accurate estimates of their own writing and math abilities. Also, while students at the commuter school seem to significantly over estimate their reading ability, students at the residential school seem to make accurate estimates for their reading ability. Students at both the commuter and the residential schools seem to make accurate estimates of their listening abilities. 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 upper-level accounting courses. 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 upper-level accounting courses 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 upper-level accounting courses 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 upper-level accounting courses.

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;

NWH: 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:

Grade BY	Sum of Squares	df	Mean Square	F	Significance
IG	10.705	3	3.568	6.672	.000
ICPA	4.616	3	1.539	2.650	.050
IGS	6.833	3	2.278	3.959	.009
NWH	16.781	27	.622	1.103	.340
JT	.620	3	.207	.341	.796
CLoad	3.118	7	.445	.743	.635
Write	3.240	3	1.080	1.883	.133
Math	.519	2	.260	.445	.642
Read	.944	3	.315	.539	.656
Listen	4.481	3	1.494	2.632	.051
GIA2	7.307	3	2.436	4.314	.006
GPA	62.618	66	.949	2.272	.000

Panel B: Residential School:

Grade BY	Sum of Squares	df	Mean Square	F	Significance
IG	20.373	3	6.791	9.191	.000
ICPA	6.991	3	2.330	2.776	.044
IGS	1.807	3	.602	.686	.562
NWH	21.711	19	1.143	1.379	.151
JT	1.345	3	.448	.509	.677
CLoad	20.499	8	2.562	3.342	.002
Write	2.332	3	.777	.889	.449
Math	1.866	2	.933	1.070	.346
Read	5.380	3	1.793	2.106	.103
Listen	7.512	3	2.504	2.997	.033
GIA2	25.762	4	6.441	9.153	.000
GPA	75.396	56	1.346	2.491	.000

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:

Grade BY	Sum of Squares	df	Mean Square	F	Significance
IG	425.073	3	141.691	1.073	.362
ICPA	4440.255	3	1480.085	12.217	.000
IGS	4339.133	3	1446.378	11.851	.000
NWH	4544.008	27	168.297	1.312	.151
JT	250.928	3	83.643	.590	.622
CLoad	684.577	7	97.797	.690	.681
Write	328.429	3	109.476	.820	.484
Math	518.973	2	259.487	1.966	.143
Read	1048.522	3	349.507	2.686	.048
Listen	1348.861	3	449.620	3.494	.017
GIA2	295.001	3	98.334	.703	.551
GPA	17085.303	66	258.868	3.056	.000

Panel B: Residential School:

Grade BY	Sum of Squares	df	Mean Square	F	Significance
IG	4955.771	3	1651.924	20.476	.000
ICPA	1229.979	3	409.993	3.772	.012
IGS	165.025	3	55.008	.471	.703
NWH	3127.294	19	164.594	1.533	.086
JT	26.299	3	8.766	.074	.974
CLoad	4800.117	8	600.015	7.055	.000
Write	292.565	3	97.522	.843	.473
Math	242.934	2	121.467	1.054	.351
Read	803.620	3	267.873	2.394	.071
Listen	1611.203	3	537.068	5.075	.002
GIA2	2897.035	4	724.259	7.476	.000
GPA	8422.782	56	150.407	1.657	.019

TABLE 3
SPEARMAN CORRELATION COEFFICIENTS FOR GRADE[a]

	Grade	*IG*	*ICPA*	*IGS*	*NWH*	*JT*	*CLoad*	*Write*	*Math*	*Read*	*Listen*	*GIA2*	*GPA*
Grade		.292***	.173**	.074	-.030	.079	.004	.145**	.011	-.016	.163**	.251***	.529***
IG	.261***		.142**	-.210***	-.064	-.054	-.034	.227***	.182***	.299***	.178***	.300***	.318***
ICPA	.208**	-.049		.418***	.019	.155**	.073	.047	-.203**	-.144**	-.019	-388***	-.050
IGS	.119	-.014	.269***		-.112	-.136	.243***	.096	-.090	-.044	-.079	-.109	-.010
NWH	-.061	.000	.100	.059		.319***	-.261***	-.019	-.157**	.028	.027	.072	-.118*
JT	.060	-.008	.037	.071	.710***		-.183**	.069	.255***	.073	.056	-.054	-.170**
CLoad	.161*	.018	.097	.114	-.166*	-.106		.016	.100	.023	-.072	-.009	.021
Write	.138	.075	-.047	-.007	.328***	.265***	-.076		.168**	.529***	.234***	.064	.289***
Math	.042	.135	-.104	.028	.075	.111	-.019	.301**		.238***	.163**	.264***	.183***
Read	.159*	.133	.042	.011	.113	.174**	.007	.365***	.051		.227***	.208***	.157**
Listen	.142*	.075	.016	-.093	.175**	.167*	-.167*	.317***	.113	.548***		.212***	.060
GIA2	.449***	.163*	.067	.109	-.036	-.030	.188**	-.011	.046	.008	.002		.386***
GPA	.529***	.128	.055	.143*	-.062	.135	.202**	.094	.111	.047	.142*	.340***	

***, **, * 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]

	Points	*IG*	*ICPA*	*IGS*	*NWH*	*JT*	*CLoad*	*Write*	*Math*	*Read*	*Listen*	*GIA2*	*GPA*
Points		.049	.360***	.256***	-.028	.069	.079	.063	.047	-.183***	.088	.014	.399***
IG	.506***		-.111	-.246***	-.082	-.078	-.021	.214***	.168**	.312***	.172**	.309***	.319***
ICPA	.243***	-.010		.457***	.023	.152**	.103	.082	.176**	-.098	-.007	-.360***	-.037
IGS	.099	-.004	.247***		-.062	-.110	.243***	.097	-.101	-.063	-.072	-.144**	-.016
NWH	-.023	.017	.114	.052		.356***	-.196***	-.010	-.174**	.020	.025	.066	-.115
JT	.025	-.013	.046	.085	.602***		-.153**	.068	-.241***	.093	.059	-.054	-.177**
CLoad	.253***	.090	.066	.015	-.183**	-.091		.019	.089	.012	-.086	-.004	.026
Write	.101	.073	-.044	.004	.307***	.233***	-.060		.146**	.522***	.236***	.050	.293***
Math	.032	.118	-.118	.014	.088	.112	-.065	.323***		.238***	.154**	.250***	.178***
Read	.248**	.150	.051	.000	.099	.170	.037	.361***	.090		.229***	.193**	.178***
Listen	.217**	.048	.079	-.147	.187**	.192	-.145	.350***	.119	.567***		.218***	.068
GIA2	.422***	.258***	.067	.088	-.060	-.038	.232***	-.021	-.043	.027	.004		.358***
GPA	.435***	.141*	.052	.132	-.094	.119	.216**	.073	.078	.028	.078	.346***	

***, **, * 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]

	Grade	*IG*	*ICPA*	*IGS*	*NWH*	*JT*	*CLoad*	*Write*	*Math*	*Read*	*Listen*
Grade		.187**	.225***	.078	.028	.186	-.008	-.001	.060	-.126*	.141*
IG	.252***		-.015	-.245**	-.116	-.030	-.059	.144*	.065	.209***	.110
ICPA	.203**	-.030		.397***	.127*	.165**	.134*	.064	.077	-.054	.055
IGS	.016	-.034	.241***		-.030	-.112	.294***	.056	-.075	-.060	-.101
NWH	-.007	.038	.122	.067		.327***	-.219***	.029	-.163**	-.004	.035
JT	.029	-.012	.045	.075	.620***		-.171**	.145*	.207***	.152**	.085
CLoad	.108	.024	.048	-.022	-.164*	-.108		-.004	.028	-.029	-.131
Write	.136	.077	-.045	-.003	.315***	.224***	-.070		.130*	.527***	.248***
Math	.035	.110	-.123	.004	.096	.104	-.086	.320***		.181**	.124*
Read	.195**	.148*	.049	-.005	.103	.170**	.029	.361***	.088		.206***
Listen	.181**	.044	.077	-.158*	.195**	.183**	-.165*	.345***	.113	.568***	

***, **, * 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]

	Points	*IG*	*ICPA*	*IGS*	*NWH*	*JT*	*CLoad*	*Write*	*Math*	*Read*	*Listen*
Points		-.068	.348***	.202***	.104	.149**	.065	-.108	-.172**	-.286***	.055
IG	.462***		-.015	-.245***	-.116	-.030	-.059	.144*	.065	.209***	.110
ICPA	.242***	-.030		.397***	.127*	.165**	.134*	.064	-.077	-.054	.055
IGS	.034	-.034	.241***		-.030	-.112	.294***	.056	-.075	-.060	-.101
NWH	.031	.038	.122	.067		.327***	-.219***	.029	-.163**	-.004	.035
JT	-.003	-.012	.045	.075	.620***		.171**	.145*	.207***	.152**	.085
CLoad	.135	.024	.048	-.022	-.164*	-.108		-.004	.028	-.029	-.131*
Write	.099	.077	-.045	-.003	.315***	.224***	-.070		.130*	.527***	.248***
Math	-.004	.110	-.123?	.004	.096	.104	-.086	.320***		.181**	.124
Read	.221***	.148*	.049	-.005	.103	.170**	.029	.361***	.088		.206***
Listen	.224***	.044	.077	-.158*	.195**	.183**	-.165*	.345***	.113	.568***	

***, **, * 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)	-1.340	.554		-2.421	.017
IG	.269	.082	.227	3.298	.001
ICPA	.110	.067	.118	1.635	.104
IGS	.068	.052	.094	1.316	.190
NWH	-.002	.004	-.029	-.449	.654
JT	.148	.055	.185	2.694	.008
CLOAD	-.001	.035	-.002	-.024	.981
Write	.002	.071	.002	.026	.979
Math	-.005	.073	-.004	-.064	.949
Read	-.174	.066	-.196	-2.640	.009
Listen	.128	.065	.127	1.969	.051
GIA2	.078	.061	.096	1.292	.198
GPA	.903	.130	.485	6.951	.000

a. Dependent Variable: Grade; Model Summary: R: .648, R^2: .420, adjusted R^2: .378, ANOVA F value: 9.999 (Significant at .000)

Panel B: Residential School

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.539	.629		-2.446	.016
	IG	.198	.067	.206	2.962	.004
	ICPA	.212	.092	.162	2.316	.022
	IGS	.002	.071	.002	.034	.973
	NWH	-.007	.006	-.099	-1.114	.267
	JT	.045	.079	.049	.566	.573
	CLOAD	.064	.054	.084	1.184	.239
	Write	.135	.107	.099	1.260	.210
	Math	-.087	.109	-.057	-.801	.425
	Read	.034	.099	.029	.342	.733
	Listen	.121	.100	.104	1.206	.230
	GIA2	.204	.068	.219	2.989	.003
	GPA	.664	.131	.378	5.054	.000

a. Dependent Variable: Grade; Model Summary: R: .682, R^2: .465, adjusted R^2: .413, ANOVA F value: 8.977 (Significant at .000)

TABLE 8
REGRESSION ANALYSIS FOR POINTS

Panel A: Commuter School

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	30.058	8.663		3.470	.001
IG	.466	1.278	.026	.364	.716
ICPA	3.367	1.056	.239	3.189	.002
IGS	1.045	.812	.095	1.286	.200
NWH	.020	.060	.023	.335	.738
JT	1.571	.858	.130	1.831	.069
CLOAD	.303	.553	.036	.548	.584
Write	-.267	1.117	-.018	-.239	.812
Math	-1.170	1.145	-.068	-1.022	.308
Read	-3.627	1.029	-.271	-3.526	.001
Listen	1.638	1.014	.108	1.615	.108
GIA2	.510	.950	.041	.538	.592
GPA	13.429	2.034	.476	6.602	.000

a. Dependent Variable: Points: Model Summary: R: .615, R^2: .378, adjusted R^2: .333, ANOVA F value: 8.415 (Significant at .000)

Panel B: Residential School

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	26.378	6.857		3.847	.000
IG	4.464	.729	.404	6.126	.000
ICPA	2.878	.999	.191	2.880	.005
IGS	.353	.774	.031	.456	.649
NWH	-.019	.066	-.025	-.297	.767
JT	-.191	.858	-.018	-.223	.824
CLOAD	1.069	.588	.123	1.819	.071
Write	.451	1.169	.029	.386	.700
Math	-.699	1.186	-.039	-.590	.556
Read	.225	1.074	.017	.210	.834
Listen	2.361	1.092	.177	2.163	.032
GIA2	1.955	.743	.183	2.630	.010
GPA	5.269	1.432	.261	3.680	.000

a. Dependent Variable: Points: Model Summary: R: .721, R^2: .519, adjusted R^2: .473, ANOVA F value: 11.159 (Significant at .000)

TABLE 9
PARTIAL CORRELATION COEFFICIENTS FOR EACH DISTRACTION FACTOR WITH GRADE[a]

Part A

	Grade	*WH*	*JT*	*CLoad*
Grade		-.051	.065	.031
NWH	-.093			
JT	.127			
CLoad	.235***(.006)			

Part B

	Grade	*NWH*	*JT*	*CLoad*
Grade		-.031	.151**	.054
NWH	-.018			
JT	..044			
CLoad	.109			

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]

Part A

	Points	*NWH*	*JT*	*CLoad*
Points		.042	.045	.116
NWH	-.007			
JT	.004			
CLoad	.252***(.003)			

Part B

	Points	*NWH*	*JT*	*CLoad*
Points		.073	.096	.136*
NWH	.059			
JT	-.027			
CLoad	.142 (.104)			

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.