Factors Associated with Student Performance in Auditing: A Comparative Study in Commuter and Residential Schools

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Of the three motivation factors, the grade the student would like to earn had strong association with student performance but only at the commuter school. Intention to take the CPA exam or attend graduate school had no associations with student performance at either school. Prior actual ability variables (Intermediate Accounting II grade and GPA) and self-perceived reading ability had strong associations with student performance but only at the commuter school. Surprisingly, holding non-accounting-related jobs, working too many hours per week, and carrying higher course loads, had no significant negative associations with student performance in the Auditing course at either 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 motivation factors and student performance as well as the associations between distraction factors and student performance in the undergraduate Auditing 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. Chen et al. (2009) and Maksy and Zheng (2010) investigated student performance in three undergraduate courses, one of which was the Auditing course. One of the limitations of the Chen et al. and Maksy & Zheng studies was that they were conducted in a commuter school. They stated "we do not know whether the results will be the same for residential schools." One of their suggestions for future research was to replicate the study in a residential school. In this study we not only replicate the study in a residential school but, for comparative purposes, we collect new data from students in a commuter school of similar characteristics to those of the residential school.

As proxies for motivation, this study uses a variety of factors (the grade the students would like to earn in the course, intention to take the CPA examination, and intention to attend graduate school). As proxies for distraction, the study uses the number of hours of work per week, the type of job (whether or not it is 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 (GPA.) The student performance, the dependent variable, is measured (1) by the letter grade and (2) by the total points earned in the course.

One of the objectives of this study is 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. The other objective of the study is to determine whether students, generally, make accurate evaluations of their own writing, math, reading, and listening abilities. If they do, then we should expect some positive associations between these abilities and students' performance in the Auditing course, and vice versa.

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

REVIEW OF PRIOR RESEARCH

Prior studies have explored various factors (e.g., general academic performance, aptitude, prior exposure to mathematics, prior exposure to accounting, gender, age, 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). 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 GPA and the grade in Intermediate Accounting II are strong predictors of student performance in 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.

Accounting is a subject area that requires an accumulation of prior knowledge and considerable quantitative skills. Thus, several studies have investigated the impact of prior exposure to mathematical background and accounting courses on student performance in college accounting courses. The results are inconclusive. On 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. Conflicting results are also observed about the association between student performance in introductory accounting and their performance in non-introductory accounting courses. For example, Canlar (1986) finds evidence that college-level exposure to accounting is positively related to student performance in the first MBA-level financial accounting course. Additionally, Tickell and Smyrnios (2005) find that the best predictor of academic performance in any one year is the performance in the same discipline in the previous year. In contrast, Doran et al. (1991) show that performance in the introductory accounting course has a negative impact on performance in subsequent accounting courses. Ambiguity is also present with respect to the influence of mathematical background on student 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. On the other hand, Gist et al. (1996) do not report the same results.

Furthermore, Guney (2009) suggests that grades in secondary education mathematics are a very strong determinant of student performance in accounting but only for non-accounting majors.

Age and gender are two demographic variables that receive less attention than those factors discussed above, but the results are similarly inconclusive. For example, Bartlett et al. (1993) and Koh and Koh (1999) suggest that younger students have better performance, particularly in a three-year accountancy program. However, Jenkins (1998) and Lane and Porch (2002) conclude that age is not a significant determinant of student performance in Auditing and management accounting courses. The studies related to gender also produce conflicting results. Some studies indicate that male students perform better than female ones, but the results are either insignificant (for example, Lipe 1989) or only hold true for introductory courses (Doran et al. 1991). Moreover, Mutchler et al. (1987) find that female students score significantly higher than male students. Furthermore, Gracia and Jenkins (2003) find there is a significant difference in the performance in favor of female students over male students in Wales. However, this finding was limited to the second year of a degree program in accounting and finance. In contrast, other studies find no significant differences in performance between male and female accounting students. For example, Tyson (1989) and Buckless et al. (1991) demonstrate that gender effect disappears when they control for general academic ability. Similarly, Gammie et al. (2003) find there is very little indication of performance differential between males and females throughout the degree program.

It is also possible that other intervening variables, besides the demographic variables, may have an effect on student performance in accounting courses in college. For example, Bartlett et al. (1993) conclude that very few of the educational, demographic or financial characteristics variables appear to have a significant influence on student performance in university accounting examinations. Also, 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.

Prior studies about the influence of motivation and effort on student performance also report conflicting results. For example, 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 contra-intuitive evidence that the more time spent studying per week, the lower the grade in the introductory finance course. However, this counter-intuitive result is most likely due to noncontrolling for prior actual ability factors, such as GPA. In this study, we use two prior actual ability factors (GPA and Grade in Intermediate Accounting II) for control purposes. Using self-reported data, Nofsinger and Petry (1999) find no significant relationship between effort and student 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 would like to earn (which they used as a proxy for motivation) in Advanced Accounting and Auditing courses is significantly associated with student 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 (2004) 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. However, their study was strictly conducted in a commuter school where 80% of the students worked full time.

Schleifer and Dull (2009) address metacognition in students and find a strong link between metacognitive attributes and academic performance. Metacognition is frequently described as "thinking about thinking" and includes knowledge about when and how to use particular strategies for learning or for problem solving.

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 would like 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 Auditing course in a commuter school and a residential school and note any differences. 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. We initially assume that there should be a positive and significant association between each of these motivation factors and student performance in the Auditing course if these goals are actually motivating students to study hard to achieve the goals. The problem is that most students may answer "yes" to the question "do you intend to take the CPA exam?" or "do you intend to attend graduate school?" when in fact they do not care enough about achieving those goals to really study hard to achieve them. If that is the case, the association between these variables and student performance may not be significant. Also, an argument may be made that students who go to residential schools are from well-to-do families that can afford to pay for room and board in addition to tuition. These students may not be as motivated (to take the CPA exam or attend graduate school) as students who go to commuter schools who may be from families that are not as well-off as the families of students who go to residential schools. In other words, residential school students may be just going to school, as a matter of course, to earn a college degree but not necessarily to improve their economic lot. On the other hand, commuter school students may be more motivated to earn higher grades to be able to land a good job and improve their economic lot. If this argument is valid, then only the first motivation variable is expected to be significantly associated with student performance at the commuter school but not at the residential school. However, using the same assumption that commuter school students may not be from as well-to-do families as residential school students, an argument may be made that commuter school students may not *really* be motivated to take the CPA exam or pursue graduate studies because they cannot afford the extra cost of these options. Most states require 150 credit hours to sit for the CPA exam and the additional 30 credit hours will require at least one extra year of study. Also, most master degree programs require one to two years of study. If this latter argument is valid, then we cannot be sure that these two motivation factors (intention to take the CPA exam and intention to attend graduate school) will be significantly associated with student performance at commuter schools either. We simply do not know. It is an empirical question that this study will try to answer.

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 during the semester, the student's type of job and whether it is related or unrelated to accounting or business, and the student's number of courses taken per semester) and the student's performance in the Auditing course. Intuitively, 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 Auditing course (as well as the other courses the student is taking) and, thus, the student's grade 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. We also assume 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 of the Auditing course. In this case, the student's performance in the course may not be affected negatively as when the student's job type is not related to accounting at all. Furthermore, we assume 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 Auditing 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 prior discussion, we hypothesize 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 accounting related, and/or the number of courses taken per semester is too high, there will be a significant *negative* association between these distraction factors and the student's performance in the Auditing course. 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, we will test the effect of each distraction factor on student performance while controlling for the other two factors. There may be other factors that distract commuter school students and residential school students differently. For example, commuter school students may spend a lot of time commuting, which reduces their study time. On the other hand, residential school students may spend a lot of time socializing, which reduces their study time. These factors are not investigated in this study as we believe they most likely cancel each other out.

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 Auditing 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, we argue 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." As far as we know, the two faculty members who taught the Auditing course in both schools have indicated that they did not give continuous feedback to the students in these four areas. However, the faculty member in the commuter school indicated that he required some extra reading assignments outside the textbook. Thus, we expect that there will be no significant positive associations between the students' self-perceived writing, math, reading, and listening abilities and their performance in the Auditing course in either the commuter or the residential school. One exception to this expectation is the possibility of finding some significant association between students' reading abilities and their performance in the Auditing course at the commuter school.

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. We expect this to be the case in this study as well. With regard to all three objectives of this study, we use *two prior actual ability factors* (the student's grade in Intermediate Accounting II and the student's overall GPA) to control their impact on student performance in the Auditing course. Based on the above discussion, we formulate the following hypotheses:

Motivation Factors

H_1: There is a significant association between the grade that the student would like to earn in the Auditing course and student performance in that course at the commuter school but not at the residential school.

H_2: There is no association between the student's intention to take the CPA Exam and the student performance in the Auditing course at either the commuter or the residential school.

H_3: There is no association between the student's intention to attend graduate school and student performance in the Auditing course at either the commuter or the residential school.

Distraction Factors

H_4: There is a significant negative association between the student's number of hours of work per week and student performance in the Auditing course at both the commuter and residential schools.

H_5: There is a significant negative association between the student's type of job (if it is not related to accounting) and student performance in the Auditing course at both the commuter and residential schools.

H_6: There is a significant negative association between the student's number of courses taken per semester and student performance in the Auditing course at both the commuter and residential schools.

Self-Perceived Ability Factors

H_7: With the exception of a possible significant association between the student's self-perceived reading ability and student performance in the Auditing course at the commuter school, there are no significant associations between the student's self-perceived writing, math, reading, and listening abilities and student performance in the Auditing course at either the commuter or the residential school.

Control Factors

H_8: There is a significant association between the grade the student earned in Intermediate Accounting II and student performance in the Auditing course at both the commuter and residential schools.

H_9: There is a significant association between the student's overall GPA and student performance in the Auditing course at both the commuter and residential schools.

METHODOLOGY

Survey Questionnaire

We modified a list of survey questions, from Ingram et al. (2002) and, besides the study variables, included some demographic and other information. The survey was then distributed to students in the Auditing course at a commuter school and a residential school.

Data Collection and Measurement of Variables

Data from the survey questionnaire was collected from 112 students enrolled in the undergraduate Auditing course at a commuter school and 36 students enrolled in the same course at a residential school. Other than the fact that one is a commuter school and the other is a residential school, we selected two schools that 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. Third, members of the faculty in both universities are unionized and, thus, each faculty member receives the same percent salary increase (if any) each year. Fourth, both universities went for at least a year without a negotiated contract. Fifth, both universities are non-AACSB accredited but both are in the AACSB candidacy stage (i.e., both received a letter from AACSB notifying them that their application for accreditation has met the minimum requirements and they are candidates for accreditation). Sixth, both universities are located either in or very near some of the largest cities in the United States. One minor difference between the two schools that was discovered during the analysis of the collected data is that the percentage of students who work and the average number of hours of work per week is larger at the commuter than at the residential school. On the other hand, the average number of courses taken per semester is larger at the residential school than at the commuter school. However, these differences are two of the distraction

factors investigated in the study. Thus, because of the major similarities between the two schools, we assume that any differences in the study results between the two schools should be largely attributed to the fact that one university is a commuter school and the other is a residential school. The data was collected in spring, summer, and fall of 2010 from several sections of the Auditing course offered at the commuter school, and in spring 2011 from one section of the same course offered at the residential school. The course in each school was taught by the same instructor and, thus, the instructor effect on the results for each school is not an issue to be concerned about. The final sample included 103 useful responses from the commuter school and 33 from the residential school. While all the data representing the independent variables are primary data, we verified the data representing the control variables (student grades in Intermediate Accounting II and overall GPAs) 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 formulated hypotheses, we used One-Way Analysis of Variance (ANOVA), and regression analysis to determine the potential associations between the 12 independent variables and the two dependent variables "grade" and "points". Because the dependent variable "grade" is ordinal, we used the Spearman correlations non-parametric test to determine the potential associations between "grade" and the independent variables. We used the Pearson correlations test 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 GPA, we used partial correlations. Because the number of hours of work (Hours) per week, the type of job (Job), and the number of courses (Load) taken per semester may offset the effect of each other on student performance, we used partial correlations to determine the association between student performance (measured by "grade" and "points") and Hours while controlling for Job and Load. We repeated the same process to determine the association between student performance and Load while controlling for Hours and Job, and the association between student performance and Job while controlling for Hours and Load. Furthermore, we repeated the above three processes while controlling for GIA2 and GPA in addition to two distraction factors.

RESULTS OF THE STUDY

TABLES 1-10, in APPENDIX A, present the results of the study. TABLE 1 presents the ANOVA results using "grade" as a measure of student performance 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 the prior actual ability variables (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 of TABLE 9 presents partial correlations for each distraction factor with "grade" while controlling for the other two distraction factors as well as the two prior actual ability factors. 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 of TABLE 10 presents partial correlations for each distraction factor with "points" while controlling for the other two distraction factors as well as the two prior actual ability factors.

Below we analyze the results of the study by the type of factors investigated (motivation, distraction, self-perceived abilities, and control).

Motivation Factors Associated with Student Performance

At the commuter school, as TABLES 1- 4 indicate, of the three motivation variables discussed in H_1 to H_3, one variable, the grade the student would like to earn in the course, is significantly associated (at the .01 significance level) with student performance (defined as either the "grade" or the "points" the student received) in the Auditing course under the one-way ANOVA, Spearman and Pearson correlations tests. As TABLE 5 and 6 indicate, after controlling for the prior actual ability factors (GIA2 and GPA), this same association continued to be significant at the .01 level. The regression analyses, as TABLES 7 and 8 indicate, also show the same association at the .01 significance level when student performance is defined as "grade" and at the .05 level of significance when student performance is defined as "points." As TABLES 1-8 indicate, the two other motivation factors (intention to take the CPA exam and intention to attend graduate school) have no significant associations with student performance, however defined, under all tests. The above discussion indicates that, for the commuter school, the statistical analyses provide support to H_1 to H_3. The fact that there is support for H_2 and H_3 provides some validity to our argument that *most* students who go to commuter schools (at least those schools that are similar to the study school) do not *really* intend to take the CPA exam or pursue graduate studies (at least not immediately after they complete the bachelor degree) because they come from not so well-to-do families and cannot afford to stay in school for one or two years after obtaining their undergraduate degree.

At the residential school, as TABLES 2, 4 and 8 indicate, of the three motivation variables discussed in H_1 to H_3, only one variable, the grade the student intends to earn in the course, is significantly associated with student performance under the one-way ANOVA, Pearson correlations, and regression analysis. However, it was only significant at the .05 significance level and only when student performance is defined as the "points" the student received. As TABLE 6 indicates, after controlling for the prior actual ability factors (GIA2 and GPA), the significance level of that association was reduced to the .10 level. There was no association whatsoever between the grade the student intends to earn in the course and the student performance defined as "grade." Furthermore, as is the case at the commuter school, the two other motivation factors (intention to take the CPA exam and intention to attend graduate school) have no significant associations with student performance, however defined, under all tests. The above discussion indicates that, for the residential school, the statistical analyses provide support for H_1 but only when student performance is defined as the total "points" received for the course, which is a finer measurement of performance. When student performance is defined as the "grade" received for the course, H_1 is not supported. As is the case for the commuter school, the statistical analyses provide support to H_2 and H_3. This means that there is some validity to our argument that *most* students who go to residential schools (at least those schools that are similar to the study school) are not *really* motivated enough to study hard, so that they can take and pass the CPA exam or pursue graduate studies, because they come from well-to-do families and are not that desperate to increase their economic fortunes.

Distraction Factors Associated with Student Performance

As TABLES 1 - 8 indicate, with the exception of the regression analyses showing a significant negative association (at the .05 level) between the number of hours of work and student performance, however defined, at the residential school, and defined only as "grade" at the commuter school, all other tests show that the three distraction factors have no significant *negative* association with student performance at either school.

At the commuter school, as Part A of both TABLES 9 and 10 indicates, each distraction factor has no significant *negative* effect on student performance, however defined, even when we control for the other two distraction factors. As TABLE 10, Part B indicates, when we control for the other two distraction factors as well as the two prior actual ability variables (GIA2 and GPA), the results remain the same when student performance is defined as "points." However, as TABLE 9, Part B indicates, when student performance is defined as "grade," the number of hours of work per week has a significant *negative* effect (at the .05 level) on student performance. Interestingly, when we control for the number of hours of work per week and the course load per semester, the accounting-related type of job has a *positive* effect on student performance (defined as "grade") but only at the .10 level of significance.

At the residential school, as TABLES 9 and 10 indicate, when we control for the type of job and course load (or for type of job, course load, and the prior actual ability variables), the number of hours of work per week has a significant *negative* effect (at the .05 level) on student performance, however defined. Interestingly, when we control for the number of hours of work per week and the course load per semester, (or for the number of hours of work per week, course load, and the prior actual ability variables), the accounting-related job type has a significant *positive* effect on student performance, however defined, but only at the .10 level of significance. In light of the above discussion, we can generally state that the statistical analyses do not provide support to H_4 to H_6. An exception to this general statement is that, of the students who carry the same course load and have the same job type, the grade in the Auditing course for those who work more hours per week will be affected negatively. There is also a weak indication (at the .10 significance level) that students who have an accounting-related job will have better grades in the Auditing course than students whose jobs are non-accounting-related.

Self-Perceived Abilities Factors Associated with Student Performance

At the commuter school, the self-perceived writing, math, and listening abilities seem to have little association with student performance. As to the writing ability, with the exception of a significant association (at the .05 level) with student performance (defined as "grade") under one-way ANOVA (TABLE 1), no other tests show any association. While TABLE 3 shows some weak association (at the .10 level), that association totally disappeared (as shown in TABLE 5) after we controlled for the prior actual ability factors (GIA2 and GPA). As to the math ability, with the exception of a significant association (at the .05 level) with student performance (defined as "points") under one-way ANOVA (TABLE 2), no other tests show any association. While TABLE 4 shows some weak association (at the .10 level), that association totally disappeared as shown in TABLE 6 after we controlled for the prior actual ability factors (GIA2 and GPA). As to the listening ability, while TABLES 3 and 4 show significant association (at the .05 level) with student performance, however defined, that association totally disappeared as shown in TABLES 5 and 6, after we controlled for the prior actual ability factors (GIA2 and GPA). On the other hand, the self-perceived reading ability seems to have some significant association with student performance. The One-way ANOVA shows that reading ability is significantly associated (at the .05 level) with student performance (defined as "grade") as TABLE 1 indicates, and it is also significantly associated (at the .10 level) with student performance, defined as "points," as TABLE 2 indicates. Additionally, the Spearman correlations test shows that reading ability is significantly associated (at the .01 level) with student performance, defined as "grade," as TABLE 3 indicates, and the Pearson correlations test shows that reading ability is also significantly associated (at the .05 level) with student performance, defined as "points," as TABLE 4 indicates. However, when we controlled for the prior actual ability factors (GIA2 and GPA), the association between reading ability and student performance, defined as "points," disappeared and the association between reading ability and student performance, defined as "grade," remained significant but only at the .10 level. In light of the above discussion, we can generally state that the statistical analyses provide support to H_7.

At the residential school, with one minor exception (that the one-way ANOVA shows a significant association, at the .05 level, between the self-perceived listening ability and student performance defined as "grade"), none of the four self-perceived abilities have any association with student performance, however defined, under any other tests. Surprisingly, the regression analyses show a counter-intuitive *negative* and significant association (at the .05 level) between the self-perceived math ability and student performance, however defined. Also, the Spearman correlations in TABLE 3 show the same *negative* association (but only at the .10 level of significance) between the math ability and student performance defined as "grade." Moreover, when we controlled for the prior actual ability factors, that negative association became even more significant (at the .05 level). Apparently, these counter-logical results are caused by the fact that students with lower performance have substantially over-estimated their math abilities by checking the top-rated "very good" response. A cross-tabulation analysis between grade and math ability (which is available from the authors upon request) shows that the only student who received a "D" for the course checked "Very Good" math ability, and of the five students who received a "C," four

(or 80%) checked "Very Good" and one student (or 20%) checked "Good" math ability. Also, of the 12 students who received a "B," eight (or two-thirds) checked "Very Good," three (or 25%) checked "Good," and only one student (or 8%) checked "Average" math ability. Additionally, of the 15 students who received an "A," seven (or only 46.7%) checked "Very Good," six (or 40%) checked "Good," and two (or 13%) checked "Average" math ability. None of the 33 students surveyed checked "Poor" for their math abilities. The cross-tabulation analysis between "points" and math ability showed similar results.

Prior Actual Ability Factors Associated with Student Performance

At the commuter school, as TABLES 1-4, 7 and 8 indicate, the two variables representing prior actual ability (GIA2 and GPA) have significant associations, at the .01 level, with student performance, however defined. That is not the case, however, at the residential school. With the exception of the correlation tests (in TABLES 3 and 4) showing significant association between GPA and student performance (at the .01 level) and in TABLE 3 showing significant association between GIA2 and student performance (defined as "grade") at the .10 level, no other test showed any significant association between the prior actual ability factors and student performance. In light of the above discussion, we can generally state that the statistical analyses provide support to H_8 and H_9 at the commuter school but not at the residential school. The fact that the association between GIA2 and GPA and student performance is significant at the commuter school but not significant at the residential school is somewhat puzzling. We know that the instructor who taught the Auditing course at the commuter school was a full-time tenured faculty member whereas the instructor who taught the Auditing course at the residential school was a part-time faculty member. Initially, we thought that it was possible that the Auditing instructor at the residential school had inflated the grades somewhat, perhaps to get more favorable student evaluations to improve his chances of being reappointed to teach the course in future semesters. However, after reviewing the descriptive statistics, we believe that was not likely the case. The sample mean of the grade in the Auditing course at the residential school is not significantly (less than 1%) higher than the comparable mean in the commuter school: 3.24 versus 3.21. The lack of significant association between GIA2 and the grade in the Auditing course at the residential school is probably due to the fact that the average GIA2 (1.94) for the sample just happened to be too low. It is a more than 40% lower mean than the average grade in the Auditing course (3.24) and more than 10% lower than the average GIA2 at the commuter school (2.16).

CONCLUSIONS AND RECOMMENDATIONS

One general conclusion of the study is that residential school students (most of whom come from well-to-do families) may not be as motivated as commuter school students (most of whom come from families that may not be as well off economically) to study hard to earn higher grades in the Auditing course. More specifically, all the tests used in the study provided strong evidence that the majority of the commuter school students who responded that they intend to earn high grades in the Auditing course actually earned high grades. On the hand, the study provided only moderate evidence that this was the case with the residential school students and only when student performance was defined as the total "points" received for the course. While a larger percentage of the residential school students (than the percentage of the commuter school students) responded that they intended to earn high grades in the Auditing course, a smaller percentage actually earned such high grades. This indicates that the majority of the students were not *really* motivated enough to study hard to earn high grades. Also, speaking of motivation, intention to take the CPA examination and intention to attend graduate school do not seem, in this study, to be good motivating factors for either commuter school or residential school students to perform well in the Auditing course.

In light of the above general conclusion, we recommend that while accounting faculty (at both commuter and residential schools) should find ways to motivate their students to study hard to earn high grades in Auditing course, they should keep in mind that informing students that this should help them pass 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 not tested in this study. Some examples

include informing students that high performance in this course may help them obtain an attractive job offer, get promoted faster, or even start their own business.

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 Auditing course. There is only a moderate evidence (and only under the regression analysis) of a negative association between the number of hours of work per week and student performance, defined as "grade," at both schools and defined as "points" at the residential school. Furthermore, at the residential school, of the students who carry the same course load and have the same type of job, those who work more hours have significantly lower performance than those who work less hours or do not work at all. Conversely, of the students who carry the same course load and work the same number of hours, those whose job is accounting- related perform significantly better than those whose job is not accounting-related.

In light of this conclusion we recommend that accounting faculty at commuter schools (where a large percentage of the students work almost full-time) need not encourage their students to work as few hours as possible to earn high grades in the Auditing course. Furthermore, if students have to work a significant number of hours to support their families, accounting faculty need not encourage those students to take as few courses per semester as possible to earn high grades in the Auditing course. If the only available jobs for students are non-accounting-related there is no need to discourage them from working in these jobs. At the residential schools, faculty should advise students to work only a moderate number of hours per week, preferably in accounting related jobs, if they need to earn high grades in the Auditing course. This is especially true if students are taking more than four courses per semester.

A third general conclusion of the study is that residential school students seem to over-estimate their own writing, math, reading, and listening abilities (especially their math abilities) much more so than commuter school students. This may be due to the fact that students taking the Auditing course are not tested in these abilities, particularly the math and listening abilities. There is some evidence that assigning reading materials outside the required textbook leads students at the commuter school to more accurately evaluate their reading abilities.

In light of this conclusion we recommend that the college of business faculty in general, and accounting faculty teaching the Auditing course in particular, should give continuous feedback to the students at least about their reading and writing abilities. This may require faculty, who usually give one or two mid-tem exam(s) in addition to the final exam in their courses, 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. We realize 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 Auditing course at the commuter school. Specifically, the study provides strong evidence that students' performance in Intermediate Accounting II and their overall GPA, are strong predictors of their performance in the Auditing course. However, this is not the case at the residential school. Only two out of six statistical tests used in the study show a significant association between GPA and student performance in the Auditing course. There is almost no association between the grade in Intermediate II and student performance in the Auditing course.

In light of this general conclusion, we recommend that accounting faculty, particularly those at the commuter schools who teach courses the students take before taking to the Auditing course, encourage their students to study hard and improve their GPA by emphasizing that research shows that students with high overall GPA continue to earn high grades in the Auditing course. Again, we realize that some faculty may already be doing this; thus, these recommendations are for those who may not be.

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 (or state-supported) universities and, therefore, the results may not be the same for private schools. Therefore, one suggestion for further research is to replicate the study using two private schools. Another limitation is that the study sample from 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. Thus, another suggestion for further research is to replicate the study using a somewhat larger sample from the residential school.

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APPENDIX A

STUDY 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; **Hours:** Number of Hours of work per week; **Job:** Type of Job (Accounting-related, Business-related, Other); **Load:** 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[1])

Panel A: Commuter School:

Grade BY	Sum of Squares	df	Mean Square	F	Significance
IG	10.930	1	10.930	29.577	.000
ICPA	.640	2	.320	.680	.509
IGS	.350	2	.175	.366	.694
Hours	11.599	21	.552	1.234	.245
Job	.483	3	.161	.337	.799
Load	3.134	6	.522	1.123	.354
Write	4.138	3	1.379	3.121	.029
Math	1.653	2	.826	1.791	.172
Read	4.653	3	1.551	3.550	.017
Listen	2.301	3	.767	1.668	.178
GIA2	9.710	2	4.855	12.669	.000
GPA	33.878	55	.616	2.179	.003

Panel B: Residential School:

Grade BY	Sum of Squares	df	Mean Square	F	Significance
IG	1.094	1	1.094	1.617	.213
ICPA	.875	2	.438	.620	.545
IGS	.077	2	.039	.053	.949
Hours	9.344	11	.849	1.403	.243
Job	.994	3	.331	.456	.715
Load	.768	3	.256	.349	.790
Write	.092	2	.046	.063	.939
Math	1.944	2	.972	1.449	.251
Read	1.619	2	.810	1.188	.319
Listen	5.420	3	1.807	3.148	.040
GIA2	3.457	3	1.152	1.797	.170
GPA	17.561	26	.675	.901	.617

1 Complete ANOVA numbers are available from the authors upon request.

TABLE 2
ONE-WAY ANALYSIS OF VARIANCE FOR POINTS
(All numbers are for Between Groups Only[1])

Panel A: Commuter School:

Points BY	Sum of Squares	df	Mean Square	F	Significance
IG	995.831	1	995.831	24.249	.000
ICPA	66.066	2	33.033	.657	.521
IGS	9.314	2	4.657	.091	.913
Hours	1279.224	21	60.915	1.287	.207
Job	84.766	3	28.255	.558	.644
Load	216.741	6	36.123	.711	.642
Write	268.608	3	89.536	1.833	.146
Math	375.548	2	187.774	3.964	.022
Read	343.406	3	114.469	2.378	.074
Listen	217.598	3	75.533	1.470	.227
GIA2	1290.067	2	645.034	17.004	.000
GPA	3922.983	55	71.327	3.126	.000

Panel B: Residential School:

Points BY	Sum of Squares	df	Mean Square	F	Significance
IG	219.276	1	219.276	4.122	.051
ICPA	31.413	2	15.706	.257	.775
IGS	22.226	2	11.113	.181	.836
Hours	696.342	11	63.304	1.134	.385
Job	46.003	3	15.334	.244	.865
Load	35.189	3	11.730	.186	.905
Write	1.441	2	.720	.012	.988
Math	77.726	2	38.863	.651	.529
Read	129.619	2	64.810	1.118	.340
Listen	316.067	3	105.356	1.968	.141
GIA2	252.742	3	84.247	1.512	.232
GPA	1437.242	26	55.279	.770	.708

1 Complete ANOVA numbers are available from the authors upon request.

TABLE 3
SPEARMAN CORRELATION COEFFICIENTS FOR GRADE

Panel A: Commuter School Coefficients

	IG	ICPA	IGS	Hours	Job	Load	Write	Math	Read	Listen	GIA2	GPA
Grade	.460***	.061	-.025	-.114	-.014	-.057	.159*	.109	.262***	.195**	.448***	.656***
IG		.144	-.035	-.077	-.052	-.036	.173*	-.077	.271**	.187**	.115	.346***
ICPA			.254***	.025	.241**	-.058	.038	-.149	.192**	.167*	.012	-.043
IGS				-.109	-.002	.037	.077	-.013	.185*	.033	.007	.070
Hours					.442***	-.227**	-.072	-.192**	-.054	-.022	.111	-.100
Job						-.108	.088	-.232**	.113	.047	-.030	-.155
Load							-.031	.192**	.008	.008	.054	-.025
Write								.130	.653***	.285***	-.099	.198**
Math									.112	.090	.242***	.187
Read										.367***	.069	.200**
Listen											.188**	.117
GIA2												.439***

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

Panel B: Residential School Coefficients

	Grade	IG	ICPA	IGS	Hours	Job	Load	Write	Math	Read	Listen	GIA2
IG	.263											
ICPA	-.032	.116										
IGS	.016	-.054	.018									
Hours	-.264	.141	.174	-.003								
Job	.031	.277	.062	-.024	.761***							
Load	.065	-.129	.314*	.048	-.289*	-.260						
Write	-.074	0.141	-.023	-.124	.374**	.253	-.162					
Math	-.293*	.217	-.232	-.012	.103	.123	-.215	.283				
Read	.242	.166	.128	-.005	.110	.161	.029	.313*	-.102			
Listen	.053	.090	.053	-.231	.201	.115	-.219	.181	.151	.336*		
GIA2	.292*	-.018	.090	.305*	.037	-.051	.053	.056	.031	.040	.141	
GPA	.486***	.216	-.028	-.155	.081	.150	.032	.060	.051	.213	.296*	.491***

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

TABLE 4
PEARSON CORRELATION COEFFICIENTS FOR POINTS

Part A: Commuter School Coefficients

	IG	ICPA	IGS	Hours	Job	Load	Write	Math	Read	Listen	GIA2	GPA
Points	.431***	-.002	-.031	-.104	-.094	.071	.085	.157*	.223**	.193**	.497***	.734***
IG		.125	-.051	-.089	-.053	.033	.158	-.096	.280***	.182*	.109	.354***
ICPA			.277***	.062	.261***	-.058	.031	-.192**	.199***	.167*	-.022	-.070
IGS				-.011	.020	.030	.072	.006	.181*	.043	.023	.040
Hours					.518***	-.140	-.043	-.194**	-.057	-.007	.092	-.084
Job						-.084	.073	-.228**	.111	.067	-.022	-.129
Load							-.029	.170	-.009	-.004	.065	-.020
Write								.109	.656***	.287***	-.111	.212**
Math									.087	.073	.224**	.149
Read										.364***	.049	.242***
Listen											.162*	.127
GIA2												0.383***

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

Part B: Residential School Coefficients

	Points	IG	ICPA	IGS	Hours	Job	Load	Write	Math	Read	Listen	GIA2
IG	.343**											
ICPA	-.090	.080										
IGS	.006	-.067	.024									
Hours	-.248	.135	.147	.022								
Job	.092	.268	.030	.030	.657***							
Load	.089	-.115	.321*	-.009	-.323*	-.253						
Write	.027	0.142	-.020	-.114	.334**	.226	-.160					
Math	-.192	.248	-.231	-.006	.152	.151	-.250	.309*				
Read	.260	.178	.054	-.031	.101	.169	.044	.304*	-.033			
Listen	.192	.087	.040	-.290*	.216	.134	-.152	.246	.204	.385**		
GIA2	.257	-.024	.123	.279	.002	-.021	.047	.052	.115	.009	.166	
GPA	.465***	.194	.194	-.172	.022	.102	.081	.037	.058	.223	.283	.489***

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

TABLE 5
PARTIAL CORRELATION COEFFICIENTS FOR GRADE
WHILE CONTROLLING FOR GIA2 AND GPA[a]

	Grade	IG	ICPA	IGS	Hours	Job	Load	Write	Math	Read	Listen
Grade		.332***	.099	-.060	-.160	.060	-.075	.099	.003	.165*	.098
IG	.164		.158	-.059	-.064	-.016	-.021	.087	-.139	.225**	.122
ICPA	.011	.131		.297***	.064	.257***	-.031	.055	-.170	.232**	.176*
IGS	.045	.027	-.082		.018	-.016	.001	.077	-.028	.193**	.035
Hours	-.275	.133	.155	.033		.532***	-.175*	-.022	-.222**	-.040	-.017
Job	.045	.246	.056	.092	.659***		-.095	.127	-.214**	.167*	.062
Load	.097	-.134	.335*	.001	-.326*	-.263		-.044	.114	-.013	-.010
Write	-.067	.145	-.025	-.139	.334*	.228	-.164		.137	.643***	.331***
Math	-.357	.259	-.253	-.042	.152	.155	-.258	.306*		.066	.049
Read	.191	.127	.102	.064	.098	.143	.028	.310*	-.036		.379***
Listen	.039	.039	.064	-.297*	.219	.113	-.183	.245	.193	.351**	

***, **, * 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	Hours	Job	Load	Write	Math	Read	Listen
Points		.257***	.068	-.067	-.118	-.032	.156	-.004	.092	.120	.080
IG	.299*		.158	-.059	-.064	-.016	-.021	.087	-.139	.225**	.122
ICPA	-.062	.131		.297***	.064	.257***	-.031	.055	-.170	.232**	.176*
IGS	.091	.027	-.082		.018	-.016	.001	.077	-.028	.193**	.035
Hours	-.292	.133	.155	.033		.532***	-.175*	-.022	-.222**	-.040	-.017
Job	.053	.246	.056	.092	.659***		-.095	.127	-.214**	.167*	.062
Load	.058	-.134	.335*	.001	-.326*	-.263		-.044	.114	-.013	-.010
Write	.009	.145	-.025	-.139	.334*	.228	-.164		.137	.643***	.331***
Math	-.253	.259	-.253	-.042	.152	.155	-.258	.306*		.066	.049
Read	.187	.127	.102	.064	.098	.143	.028	.310*	-.036		.379***
Listen	.069	.039	.064	-.297*	.219	.113	-.183	.245	.193	.351**	

***, **, * 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]

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	-.592	.612		-.968	.336
IG	.357	.122	.238	2.930	.004
ICPA	.022	.096	.019	.229	.819
IGS	-.044	.088	.038	-.496	.621
Hours	-.007	.004	-.179	-2.032	.045
Job	.082	.058	.129	1.421	.159
Load	-.037	.038	-.071	-.981	.329
Write	-.002	.093	-.002	-.021	.984
Math	.029	.080	.029	.369	.713
Read	.035	.091	.040	.383	.702
Listen	.014	.069	.016	.203	.840
GIA2	.249	.077	.268	3.227	.002
GPA	.701	.140	.436	5.011	.000

a. Dependent Variable: Grade

Panel B: Residential School

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	.208	1.428		.146	.885
IG	-.356	.264	-.200	-1.346	.189
ICPA	-.057	.217	-.038	-.265	.793
IGS	-.057	.107	-.080	-.536	.596
Hours	.005	.012	.087	.434	.668
Job	-.020	.143	-.028	-.141	.889
Load	.011	.080	.020	.134	.894
Write	.325	.177	.291	1.831	.078
Math	.016	.184	.012	.088	.931
Read	-.018	.183	-.016	-.096	.924
Listen	-.012	.182	-.013	-.064	.949
GIA2	.161	.150	.164	1.075	.292
GPA	.889	.234	.595	3.796	.001

a. Dependent Variable: Grade

TABLE 8
REGRESSION ANALYSIS FOR POINTS

Panel A: Commuter School

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	-.592	.612		-.968	.336
IG	.357	.122	.238	2.930	.004
ICPA	.022	.096	.019	.229	.819
IGS	-.044	.088	-.038	-.496	.621
Hours	-.007	.004	-.179	-2.032	.045
Job	.082	.058	.129	1.421	.159
Load	-.037	.038	-.071	-.981	.329
Write	-.002	.093	-.002	-.021	.984
Math	.029	.080	.029	.369	.713
Read	.035	.091	.040	.383	.702
Listen	.014	.069	.016	.203	.840
GIA2	.249	.077	.268	3.227	.002
GPA	.701	.140	.436	5.011	.000

a. Dependent Variable: Points

Panel B: Residential School

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	43.269	20.139		2.149	.044
IG	9.393	4.322	.359	2.173	.042
ICPA	-2.336	2.782	-.148	-.840	.411
IGS	1.365	1.874	.130	.729	.475
Hours	-.260	.108	-.519	-2.416	.025
Job	2.275	1.464	.314	1.554	.136
Load	.184	1.571	.020	.117	.908
Write	1.619	1.928	.145	.840	.411
Math	-4.558	1.963	-.398	-2.322	.031
Read	-.005	1.769	-.001	-.003	.998
Listen	2.195	1.790	.224	1.226	.234
GIA2	1.101	1.875	.119	.587	.563
GPA	4.063	2.956	.278	1.375	.184

a. Dependent Variable: Points

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

Part A

	Grade	Hours	Job	Load
Grade		-.147	.053	-.098
Hours	-.368**			
Job	.329*			
Load	.072			

Part B

	Grade	Hours	Job	Load
Grade		-.238**	.177*	-.104
Hours	-.394**			
Job	.315*			
Load	.031			

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.
[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	Hours	Job	Load
Points		-.058	-.047	.057
Hours	-.397**			
Job	.349**			
Load	.032			

Part B

	Points	Hours	Job	Load
Points		-.105	.033	.132
Hours	-.430**			
Job	.340*			
Load	-.019			

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