

Evidence on Factors Associated with Success in Intermediate Accounting I

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Abstract

The purpose of this paper is to evaluate the effect of various student characteristics on their success in the first intermediate accounting course. A large number of variables developed, in part, from numerous studies over the past 25 years are examined. The variables are examined separately and in combination, using the following framework: ability-related factors, preparation-related factors, motivation/dedication-related factors, time-related factors, and innate personal/demographic characteristics.

After Pretest, demographic data, and final grade are collected, statistical tests (t-tests, ANOVA, regression-single and multiple) are performed to examine relationships. Gradual model development using OLS regression allows replication and updating of prior studies and development of a more complete, yet concise, model of success in intermediate accounting.

The study finds that of the eight variables identified as potential indicators of success in intermediate accounting I, only three are significant. The final model includes the following three variables significant at a probability level less than .05: college grade point average, grade in the first accounting principles course, and age.

Introduction

Intermediate accounting 1 (INT1) is often considered the gateway course for the potential accounting major. It is the first course that is primarily for accounting majors rather than for all business majors. The course is rigorous, and failure to complete the course can be high. Students come to INT1 with a variety of abilities, backgrounds and perceptions. If accounting departments and instructors are more aware of student differences and how they impact the study of accounting, it may be possible to address important issues so that more students can have a successful experience with INT1.

Over the past few decades, the profile of university students has become less homogenous. Close to 50% of those attending institutions of higher education are female, minority enrollment is up, and there are more nontraditional students at many campuses. Fewer college students are following the traditional path of obtaining a degree in four years at the institutions they entered as freshmen. The typical lives of these students have also changed. More are supporting themselves; many commute to their jobs, their classes, and their homes. The diversity of student demographics and lifestyles may cause some concern for accounting instructors and departments who are unsure as to whether these differences matter and how to successfully address them if they do.

The purpose of this paper is to evaluate the effect of various student characteristics on their success in accounting course work, specifically the grade earned in the first intermediate accounting course. It brings together a large number of variables that were examined in previous studies over the past 25 years into a comprehensive model of

success in INT1. The variables are examined, separately and in combination, using the following framework: 1) ability-related factors, 2) preparation-related factors, 3) motivation/dedication-related factors, 4) time-related factors, and 5) innate personal/demographic factors. By incorporating the variables into a comprehensive model, the study offers evidence of the factors related to success in accounting.

Among the features of this paper are an extensive literature review, a gradual model development that allows replication and updating of prior studies, and the construction of a more complete model of academic accounting success. The remainder of the paper is organized as follows: first, research questions are developed and discussed in the context of prior research; second, the research methodology is described; third, the results of testing the research questions are presented; and fourth, the results are discussed. The final sections include a conclusion, limitations, and suggestions for further research.

Research Questions and Background

This section presents the five research questions explored in this paper. It also presents the variables that will be examined to answer each question and discusses prior research done in each area.

I. Do Academic Ability and Past Efforts Matter?

Students enrolled in INT1 at most universities are juniors; that is, they have accumulated at least 60 undergraduate semester credit hours. Their grade point averages (GPAs) at this point are measures of intellectual ability and application. Research has shown that it is necessary to include some measure of ability in models that attempt to determine whether other success factors are significant. In models that include some measure of ability, (SAT or ACT scores, high school GPA or college GPA) much of the explained variance is attributable to that variable (Turner et al. 1997, Gist et al. 1996, Doran et al. 1991, Buckless et al. 1991, Eskew and Faley 1988, Ingram and Petersen 1987, Clark and Sweeney 1985, Frakes 1977). Both high school (GPAH) and college GPA (GPAC) are included in this study.

II. Are Students Prepared for Intermediate 1?

Principles of Accounting

INT1 builds on the concepts and knowledge acquired in the financial accounting principles (PRIN1) course. Theoretically, the students who performed well in that course should be better prepared for INT1. Prior research presents a mixed picture of the relationship between success in PRIN1 and upper division accounting class success. Delaney et al. (1979), Clark and Sweeney (1985), and Ingram and Petersen (1987) found the PRIN1 course not to be related to performance in INT1 or other upper division accounting classes. Turner et al. (1997), however, found the PRIN1 course to be a significant variable in predicting the first test score, as well as, the final average in INT1. When the first test score was included in the model, the PRIN1 grade was no longer significant (.095). However, Buehlmann (1975) found the grade in PRIN1 to be significantly correlated with the final intermediate grade, but the second principles grade was more highly correlated. Eckel and Johnson (1983) found the average GPA for the two principles courses to be useful in discriminating between high and low GPA accounting majors. Interestingly, Delaney et al. and Ingram and Petersen also found the second principles grade to be significantly related to performance while Clark and Sweeney did not. The second principles course grade is not included as a variable in this study, because it is entirely managerial in content at our campus, while it could be a

mixture of financial and managerial for the transfer students. We include the grade in the first principles (PRIN1) course in this study.

Pretest

The use of a pretest, either existing or self-prepared, as an admission or counseling device has been examined previously with mixed conclusions. McCormick and Montgomery (1974) and Buehlmann (1975) to predict the success of two-year transfer students successfully used the AICPA Level 1 test. Ingram and Petersen (1987), however, concluded that the test provided only marginally significant information beyond the student's GPA for the first two years of college in predicting success. McCormick and Montgomery and Buehlmann used correlations to reach their conclusions, while Ingram and Petersen used several achievement/intelligence-related variables in regression models.

Frakes (1977) developed a four-part test that assessed whether students had mastered four different introductory accounting objectives. The test was marginally useful as only two of the four introductory accounting objectives (routine transactions and concepts) were even marginally significant ($p < .10$) for one of the two institutions under study. Delaney et al. (1979) developed a test, which included material from both the first (financial) and second (managerial) principles courses, to use as a departmental admissions test and as a counseling tool. They found that both the financial and managerial accounting portions of the test (or the best 38 questions from both portions) are significantly associated with success in INT1. The score on a test administered during the first week of INT1 is included in the study.

Transfer Status

Concerns about the level of rigor of community college classes have led researchers to study whether transfer students are as well prepared as nontransfer students. In a general context, Pascarella et al. (1995-96) found that no significant differences existed for increases in reading comprehension, mathematics aptitude, and critical thinking skills of students from two- or four-year institutions where ability and other demographic variables were controlled.

Two early studies found that transfer students were not as well prepared for the first intermediate accounting class as native students (Krull, 1971), and that their success in that class, their accounting GPAs, and their ultimately achieving an accounting degree were significantly worse than native students (Buehlmann 1975). Neither of these two studies controlled for ability. A recent study by Turner et al. (1997) controlled for ability and found that where students took their financial principles course was a significant predictor of both the first test score and the final grade in INT1.

At an upper division institution where all accounting majors were transfer students, McCormick and Montgomery (1974) found that the two-year transfer students were able to achieve at approximately the national average on the AICPA Level I and Level II, accounting achievement tests. All students were transfers, no distinction was made for where students took their first accounting course. Delaney et al. (1979) found that when transfer status was used in either a multiple regression or discriminant analysis model that included grades and scores on tests, the transfer status was not a significant predictor of success in INT1.

A recent study (Laband and Piette, 1995) examined the impact of various factors on success in economics. They found that transfers had lower GPAs in their upper level economics courses than did nontransfers. This finding may be relevant, because at most

institutions the two principles of economics and two principles of accounting courses are prerequisites for admittance into the school or college of business. This study will compare nontransfer students with transfers from two-year colleges.

III. Do Demographic Factors Have an Effect on Success?

Gender, race and age have been included in accounting research models to determine whether these factors are important in explaining success in accounting. They have also been used as control variables.

Gender

A large body of accounting research exists on gender effects in accounting classes. Some research suggests that females perform better than males (Mutchler et al. 1987), or that males outperform females (Buckless et al. 1991). However, most recent research suggests that once ability is controlled (SAT, ACT, GPA, etc.) there is no significant difference in the performance of males and females in accounting courses (Carpenter et al. 1993, Tyson 1989, Lipe 1989, Hanks & Shivaswamy 1985, Delaney et al. 1979, Turner et al. 1997).

Other studies have tested, with varying results, whether the gender effects could be explained by the interaction of instructor and student gender. Female instructors awarded higher grades to both females and males than male instructors (Mutchler et al. 1987). Males (females) received higher grades than females (males) in male (female) instructed classes (Lipe 1989). Buckless et al. (1991) found an interaction between instructor and student gender at one of three institutions under study, however, using SAT or ACT scores as a covariate eliminated the interaction. In a regression analysis which included academic ability variables, Doran et al. (1991) found no evidence that same or opposite gender of students and instructors explained success in accounting principles.

Race

Research on minority students, primarily Black, in accounting has taken two paths. One approach has identified factors associated with success of Black students in accounting (Booker 1991, Ward et al. 1993, Gist et al. 1996). The other approach investigates differences in success between minority and majority students. Some of these later studies (Lipe 1989, Mutchler et al. 1987, Carpenter et al. 1993) have found some evidence that minority students have less success than majority students in accounting courses, including intermediate accounting. Other studies (Buckless et al. 1991, and Tyson 1989) did not find race to be a significant factor. Thus prior research produces inconclusive results on the influence of race on success in accounting.

Age

One study was identified that considered age as a factor. Frakes (1977) found age significant as a control variable (regression) for one of two institutions considered. The Frakes study suggests that age should be considered.

IV. Are Motivation/Expectations Related to success?

Expectations

In some cases a student's expectations about a course have been shown to significantly affect the student's subsequent performance in that class (Vollmer 1986, Carpenter et al. 1993). Explanations of differences in expectations are generally attributed to differences in self-concept, familiarity with subject, or to past academic

performance. Carpenter et al. (1993) concluded that the impact of students' expectations on their final performance differed by race and gender. As discussed earlier, both race and gender are considered for the model.

Tyson (1989) asked students what grade they thought they would receive in an introductory accounting class. There was no significant difference in the mean grade expected by males (3.14) and females (3.13).

Retake

Students retake classes because they did not perform satisfactorily the first time. Whether to simply pass, improve their GPAs, or for other reasons, these students are motivated to take the class again. Retaking may impact their expectations and performance. Turner et al. (1997) found that students retaking the course performed significantly better on the first test and had higher final averages than INT1 students that were not repeating the course.

Major

At some universities (including the one under study), finance majors are required to take some upper level accounting classes, which may include INT1. INT1 can also serve as an upper division free elective for other majors in the business school. Declared accounting majors might be expected to have different expectations about a core class in their major. Neither Frakes (1977) for INT1 nor Doran et al. (1991) for both of the principles of accounting courses found being an accounting major was related to success. However, Gist et al. (1996) found that accounting and business majors performed better in the principles of accounting classes than did non-business majors and students who had not declared a major. Additionally, Turner et al. (1997) found that being an accounting major was significantly related to both the first test score and the final average in INT1. Expectations, retake, and major are included as measures of motivation/expectation to examine for a relationship to success in INT1.

V. Are Students Devoting Enough Time to Class to be Successful?

Hours of Employment, Commuting Time and Course Load

Students in many large regional/urban universities are working and taking classes. Often these students commute to and from their jobs and classes. Although in the current economic times, this may be necessary, a question arises. Do students necessarily understand the time commitment required for upper level accounting classes?

Frakes (1977) included both hours worked per week and course load in his study. Hours worked was not significant, but course load was significant for predicting success in INT1. No accounting related research was identified that considered commuting time. These variables measuring time commitment will be examined.

Methodology

Data Collection

During recent Spring and Fall semesters, all students enrolled in Intermediate Accounting I at one large comprehensive university were asked at the beginning of the course to fill out a one page personal data sheet. A pretest consisting of 22 multiple-choice questions was also completed (discussed below) (See Appendix I). Students were told that their score on the pretest would have no effect on their grade, but was to help

them identify areas that they might need to review. The pretest was piloted the previous semester and minor adjustments were made to the final instrument.

Each student supplied personal demographic information: where they had taken the first financial accounting class, their grade, overall GPA, gender, race, age, course load, and hours of employment per week, if any. Thus, all information, except for final grade in the course and the score earned on the Pretest are self-reported. [Table 1](#) below describes the demographics of the sample as a whole and by category based on where they took their first principles class, majority or minority status, and gender. T-tests on differences between the categories are also shown.

An examination of the few transfer students from four-year universities indicated that they had characteristics that did not allow them to be combined with either two-year transfer students or the native students. Thus, they were excluded from further consideration. In all further analyses, the transfer status includes only those students that transferred from two-year community colleges (primarily from two large nearby cities).

The designation at this university of a nontraditional student is a student 25 years or older. This definition was used to form a dichotomous grouping of all surveyed students. Thirty-one percent of the sample is classified as nontraditional, with slightly over half (51%) of the nontraditional students taking their principles of accounting classes at a community college. These transfer students are significantly older (26.4 years) than the native students (22.9 years) ([Table 1](#)).

Seventy-four percent of the students in the sample work, and many of these students (58%) also consider themselves commuters (TIME). The commute averaged 32 minutes. The number of hours worked (HOURS) ranges from 8 to 60 per week (an average of approximately 27 hours for those students working). See [Table 1](#). Course load (LOAD) at the beginning of the semester ranges from 3 to 19 semester hours. The average LOAD is 13, with 11% taking 9 hours and 82% taking 12 or more hours, which would be considered full-time. The full-time students plan to work an average of 24 hours per week, while those carrying fewer than 12 hours plan to work an average of 37 hours. LOAD and HOURS are inversely correlated (-.3631) as would be expected.

Students reported their race as 70% Caucasian, 15% Hispanic, 9% Black and (6%) other various ethnic groups. The 6% mixed ethnic group was eliminated from the sample. The Black (now 10%) and Hispanic (now 16%) racial components were examined to identify similarities and differences to see if it was appropriate to combine them for the regressions. Previous research has, generally, identified minority as Black, although Carpenter et al. (1993) combined Black, Hispanic, and Native American as minority. In order to determine whether Hispanic students could be combined with Black students as a single minority grouping several one-way ANOVAs were performed ([Table 2](#)). The White and Black students differ only in expectations for the variables shown. White and Hispanic students differ in expectations, grade in PRIN1, and the final grade received in Intermediate 1. Black and Hispanic students differ only on the final grade for INT1.

The Hispanic students more closely resemble the Black students than the White on the variables selected, and the small number of Black and Hispanic students precludes using each of them separately. Thus, Black and Hispanic students are combined as the minority grouping. The one-way ANOVAs above suggest that the Hispanic students drive the minority differences, because more differences are noted between the White and Hispanic students than the White and Black students. [Table 2](#) (last column) presents the one-way ANOVAs for the majority and minority categories.

The final grade earned in the course was standardized (Mutchler et al. 1987, Tyson 1989, Gist et al. 1996). This was done to allow valid comparisons across instructors, because individual instructors are responsible for their own testing and grading criteria. The standardized grade (ZFINAL) for each student was calculated by subtracting the class mean from each student's grade and dividing by the standard deviation of grades for the class. One instructor had two sections; those two sections were treated as one class because that was how grades were assigned. Success in INT1 will be measured by this variable, standardized final grade in INT1.

Pretest

The AICPA test discussed earlier takes approximately 50 minutes to give and must be purchased. The tests developed by Frakes (55 questions) and Delaney et al. (four part) appear to require considerable time to administer. The multiple choice questions, used as a pretest in this study, were selected from the test bank of a standard Financial Accounting textbook (Fess & Warren ed. 4, 1990) to measure the financial accounting knowledge of the students. A deliberate effort was made to cover as many relevant topics as possible, while keeping the time required to take the test to a minimum. The pretest used in this study (Appendix 1) includes 22 questions, and an information sheet that instructors administered in approximately 30 minutes. For most students, it had been at least one semester since they took the first principles course, because most students took the second principle course prior to INT1. The purpose of the pretest was to determine how much financial accounting information the students retained from their principles classes. That information would, theoretically, be helpful in their study of INT1 (a financial accounting class). The average number of questions on the Pretest answered correctly was 14.8 (median = 14; standard deviation = 3.58; range = 3 to 22).

Because 25% of the students had started INT1 before and dropped it, and were retaking the course, it was possible that they might remember questions on the pretest. A simple regression using dummy variables for retake versus first attempt indicated that students who had taken all or part of the course previously (and had potentially taken the pretest before) did significantly better on the pretest ($p < .02$) than first time students. Thus, score on the pretest and retaking the class will have to be reassessed if both factors are significantly related to final performance in INT1.

Analysis

The research questions were evaluated using correlations, t-test, ANOVA, simple regression, and ordinary least squares regression (OLS). Interrelationships between and among the variables were examined first using correlations, t-test, ANOVA, and regression. OLS regression is used to build a model that identifies important variables for success in INT1 while controlling for all included variables.

Simple Regression Results

The factors described above are examined individually in relation to final performance in INT1. The significant variables from each factor are then combined into a comprehensive model that explains final grade in INT1. **Table 1** presents the sample percentages by factor with t-tests of the mean differences in the percentages by location, race and gender.

Both high school grade point average (GPAH), and college grade point average (GPAC) to date were tested as variables that represent academic ability and effort. Both were self-reported. ZFINAL was regressed against GPAH and GPAC, individually and

then combined. Only GPAC ($p < .0000$) is significant either in simple or multiple regression. This single variable (GPAC) alone accounts for more than 22% of the variance in ZFINAL, and will be the ability/effort related factor carried forward to the full multiple regression model.

Students self reported their grades in the first accounting course. Almost 79% of the students in the sample had earned A's or B's for the PRIN1 course, a prerequisite for INT1 (Table 1).

Three simple regressions were performed with grade in principles (PRIN1), score on the pretest (SCORE), and transfer status (LOC) each as the independent variable and ZFINAL as the dependent variable. LOC ($p < .0291$), SCORE ($p < .0000$), and PRIN1 ($p < .0000$) are all statistically significant. When LOC, SCORE, and PRIN1 were included as independent variables (ZFINAL is the dependent) in multiple regression, only PRIN1 and SCORE remain significant at conventional levels. LOC ($p < .077$) exceeds the conventional level of .05 in the three-variable regression model, but is significant when tested alone in the simple regression model. Thus, it will be used in the full model based upon the simple regression. Therefore, all three proposed preparation-related factors are included in the full model.

In a simple regression of GENDER on ZFINAL (aptitude is not controlled), no significant difference is noted ($p < .464$). Based on this the GENDER variable is not carried forward to the full model. This is consistent with much recent research.

Other research suggested that the interaction of student gender and instructor gender (INSTGEN) might impact performance. No evidence ($p < .5615$) of this interaction is found in the sample under consideration.

The simple regression of RACE on ZFINAL showed a significantly ($p < .001$) higher relationship between majority final performance than minority. This is consistent with prior research, thus RACE will be carried forward to the multiple regression.

A simple regression of AGE against ZFINAL is significant ($p < .0000$), and AGE will be retained for the full model. When GENDER, RACE, INSTGEN, and AGE are included in a multiple regression as independent variables with ZFINAL as the dependent variable only RACE and AGE are significant. Therefore, RACE and AGE will be the demographic factors carried forward to the full model.

Research suggests that expectations of success in a course may be related to actual success. A simple regression of EXPECT on ZFINAL is significant ($p < .0000$) for the full sample. Therefore, EXPECT will be included in the multiple regression.

As discussed earlier, accounting majors are hypothesized to have higher motivation to perform in INT1, the first class of the accounting core. However, ZFINAL is not related to being an accounting major ($p < .6796$), and will not be included in the final model.

Students who are retaking the class either withdrew from the class or received a lower grade than desired. ZFINAL is only marginally ($p < .0912$) related to RETAKE, and the relationship is inverse, which suggests that the students retaking INT1 are the weaker accounting students, whether from ability or lack of motivation. However, these students performed better on the pretest, suggesting that their difficulty is not from a deficiency in basic accounting knowledge. In a multiple regression which includes EXPECT, MAJOR, and RETAKE, only EXPECT was significant. Thus, the only motivation related factor to be included is EXPECT.

LOAD, HOURS, and TIME were examined individually in simple regressions. Of the three only LOAD is significant ($p < .0008$). This finding agrees with Frakes (1977) who found LOAD to be significant but not HOURS. Thus, LOAD is the only time-related factor to be included in the multiple regression model.

Regression Analysis Results

The five factors of the model were analyzed individually above. Significant variables from each factor are included as independent variables in a multiple regression model to explain final grades earned in INT1. It is hypothesized that the following variables are valuable in explaining final performance (ZFINAL) in INT1 accounting.

<u>Variable</u>	<u>Variable Name</u>	<u>Variable Coding</u>
Academic Ability/Motivation Factor/Variable		
Grade Point Average in College	GPAC	numerical average
Preparation Factors/Variables		
Score on Pretest	SCORE	# of Questions Correct
Transfer status	LOC	0=transfer student 1=ative student
Grade in Principles 1	PRIN1	A=4,B=3,C=2,D=1
Demographic Factors/Variables		
Majority or Minority Racial Status	RACE	0=minority 1=majority
Student's Age	AGE	0=traditional 1=nontraditional
Motivation Factor/Variable		
Expected grade in Intermediate 1	EXPECT	A=4,B=3,C=2,D=1
Time Constraint Factor		
Course load for semester	LOAD	Course load (semester hours)

Model to be tested:

$$ZFINAL = SCORE + LOC + PRIN1 + GPAC + RACE + AGE + EXPECT + LOAD \quad (1)$$

The resulting regression equation follows in [Table 3](#) with standard errors, t-scores, and significance levels. Variables significant at the .05 level or below are PRIN1, GPAC, and AGE. All other variables exceeded the .05 level, with RACE ($p < .07$) the only variable that might be considered marginally significant.

The regression equation (1) is further examined for violations of assumptions. A comparison of the observed distribution of residuals to the expected distribution was plotted. Under the assumption of normality, the two cumulative distributions of the actual residuals and expected residuals should form a series of points with similar slopes. The resulting Normal Probability Plot of the standardized residuals was examined and the assumption of normality cannot be rejected.

Multicollinearity was assessed with variance inflation factors (VIF). These factors measure how much the regression coefficients are inflated relative to their values if the independent variables are not linearly related. A value in excess of 10 is generally viewed as evidence that multicollinearity is affecting the estimates (Neter et al. 1990).

The VIFs range from 1.1 to 1.3, thus it is concluded that multicollinearity is not a significant problem.

Discussion

Each research question was addressed individually (before combining in the comprehensive model). Eight variables representing each of the five factors were significant. College GPA (GPAC) as an indicator of ability was significantly related to final grade in intermediate accounting (ZFINAL). The grade in principles of financial accounting (PRIN1), score on the pretest (SCORE), and where they took their first accounting principles course (LOC), all measures of preparedness, were significant indicators of students' final grade. The demographic variables of majority/minority status (RACE) and traditional/nontraditional (AGE) were significant. Only one motivation variable was significant, expectation (EXPECT). Among the time-related variables, only course load (LOAD) is a significant indicator of final grade in intermediate accounting. These eight variables were included in the comprehensive model; the results of that model are discussed below.

GPAC

Research Question I: Do Academic Ability and Past Efforts Matter? Consistent with prior studies, an ability-measuring variable (GPAC) is significantly related to performance. College GPA is an indicator of many things: ability, motivation, hard work, ability to prioritize, and self-discipline. It is also an amalgam of achievement for students, encompassing some or all of the following: multiple institutions, multiple majors, and several years of education. High school GPA, while ostensibly measuring the same factors is not significant, perhaps because of the length of time that has elapsed for some of these students.

PRIN1

Research Question II: Are Students Prepared for Intermediate 1? Of the three preparation-related variables only the grade in the first accounting principles course (PRIN1) helps explain success in intermediate accounting. Students who perform well in principles of accounting do better in intermediate accounting. Retention of the information, as measured by the score on the pretest, appears to be less important. Transfer students received more A's in PRN1 than native students; however, their overall grades in the first principles course are not significantly different from native students. LOC is included in the final model based on the simple regression, and, as noted earlier, including the three preparation-related factors in a multiple regression shows the reduced importance of LOC in explaining success in INT1. Transfer and native students differ in many respects (Table 1), but there is no evidence that taking the principles course at a community college puts transfer students at a disadvantage relative to native students where INT1 is concerned.

AGE

Research Question III: Do Demographic Factors Have an Effect on Success? Perhaps the most interesting finding is the significance of age in explaining success in INT1. Although over 50% of the transfer students are nontraditional students, the transfer status (LOC) variable is not significant. The significant variable is the age of the student, suggesting that older students, whether they transfer in or are native students, have greater success than traditional students. Even after controlling for ability (GPAC) the older student is more successful in INT1. Age is likely a measure of maturity and

motivation. In a subject as rigorous as accounting, maturity may enable older students to better concentrate and manage their time, even though most are working while attending classes. While maturity is not something that can necessarily be taught, identifying those attributes that lead to higher success could be valuable information for traditional students and their accounting instructors.

Prior research has typically ignored age when studying performance. Whether this is because the older student population was an insignificant proportion of the total until recently, or researchers were unaware of its potential importance in explaining performance is not known. Future research will need to consider these students.

Conclusion

Of the eight variable included in the final model only GPAC, PRIN1 and AGE are significant at conventional levels. Ability, measured here by college GPA, is a significant predictor of success, which is consistent with a large body of research over a long period of time (Turner et al. 1997, Gist et al. 1996, Doran et al. 1991, Buckless et al. 1991, Eskew and Faley 1988, Ingram and Petersen 1987, Clark and Sweeney 1985, Frakes 1977). Students who do well in the first financial principles class (PRIN1) perform significantly better in the second financial accounting class. This is consistent with some prior research (Turner et al. 1997, Buehlmann, 1975). Nontraditional students do better than traditional students. This is the only study since 1977 (Frakes) that has considered the age of students. Changing demographics of student populations suggests that age has been underrepresented in accounting education research.

This study's findings differed from previous research in several instances. No significant difference in final performance of minority students and majority students was detected in the full model (Lipe 1989; Mutchler et al. 1987; Carpenter et al. 1993). An expectation of success was not significantly related to the final grade (Carpenter et al. 1993). Turner et al. (1997) and this study included three variables that produced opposite results. The Turner study identified Major, Retake, and Location as significant predictors of the final average in INT1 and the current study did not. Comparing the current study with Turner it should be noted that the two samples used were very different. The Turner study was done at a Ph.D.-granting institution and the current study at a university that grants a variety of masters' degrees, but at the time of the study no Ph.D.'s. Restrictions on dropping classes at Turner's university (3 during academic career) are much more limited than at the university under study that has no such limits on dropping classes. The current study includes twice as many transfer students (28%), a higher percentage of accounting majors (80% vs. 65%), and both a higher drop rate (26% vs. 18%) and a higher retake rate (25% vs. 17%).

This study finds that two of the variables significant in the model (age or ability) cannot be easily addressed by intervention strategies. The successful accounting student is not a member of a homogeneous group. Therefore, faculty must find ways to attract the best students to the accounting profession, regardless of age, race, gender or background. Often attracting the best students to the accounting profession begins by making the introduction to accounting courses intellectually stimulating and engaging. This is likely to happen only when instructors with experience and enthusiasm for the subject teach these first courses. Unfortunately, in most universities these classes are often viewed as the courses "anyone can teach". Only by rewarding the most proficient educators for teaching these introductory courses can the accounting profession attract the most capable students as majors.

Limitations and Future Research

The findings of this paper are restricted to one institution, a large regional state university. The students come primarily from small town and urban settings. However, many of the factors that were replicated were identified at schools of differing levels and backgrounds. Future research needs to consider yet other settings that vary in size, admission standards, public vs. private, and perhaps rural vs. urban to determine whether the findings can be generalized.

Additionally, Hispanic and Black students are combined into a Minority classification due to small numbers of both the Hispanic and Black students. Even after considerable analysis, as **Table 2** shows, this combination needs further attention. As more Hispanics and Blacks enroll in universities and colleges, differences between these groups (and Majority students) need to be assessed. Replicating this study at universities with varying ethnic populations will also increase understanding of any similarities and differences.

The increase in older students in accounting programs requires further study. If future research confirms that these students are more successful academically than traditional students, additional research is needed to follow them into their professional lives. Evaluations of their successes and/or difficulties would be useful.

This research, as well as the line of research on which it was based, is concerned with examining student characteristics. A recent publication by the Accounting Education Change Commission (AECC) and the American Accounting Association (Gainen and Locatelli, 1995) suggests that assessments of success should go beyond student characteristics and deal with assessment at the program level. However, development and assessments of programs can only progress when the student characteristics of that university at that time are clearly understood and can serve as a base. As this study has demonstrated, accounting majors are not necessarily 18-22 year-olds, taking a full course load, employed only to earn pocket money, and graduating in four years.

Future research would involve not only examining a particular program's students and their skills, abilities, and characteristics, and simultaneously assessing the program and any changes made to the program perhaps in response to student specific concerns. Interesting research suggested would include: determining the needs and expectations of future employers, evaluating the impact of a given program on different student populations, determining how the program can be improved, and whether program improvements have benefited specific groups of students that may or may not have been targeted. Therefore, while research is currently advancing on two fronts, student characteristics and program assessment, future research will merge the two and emerge more robust.

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Table 1: Demographics of Full Sample

	<u>Total</u>	<u>Transfer</u>	<u>Native</u>	<u>Majority</u>	<u>Minority</u>	<u>Male</u>	<u>Female</u>
(percentage in each category unless otherwise noted)							
T-test of mean differences by location, race, and gender							
N=	259	65	165	156	58	131	126
GPAH, Mean	3.3	3.2	3.3	3.3	3.3	3.2	3.4
GPAC, Mean	2.8	2.9	2.7*	2.8	2.6**	2.8	2.8
Grade (Prin1)							
A	36.8	44.6	33.9	39.3	22.4	29.8	43.7
B	41.9	38.5	44.9	44.0	48.3	48.1	35.7
C	20.1	15.4	20.0	14.9	29.3	19.8	20.6
D	1.2	1.5	1.2	1.8	0.0	2.3	0.0
Score on Pretest (22 possible)	14.8	15.0	14.7	15.1	14.2	15.1	14.4
Loc							
Transfer	28	NA	NA	29.7	20.8	30.7	26.1
Native	72	NA	NA	70.3	79.2	69.3	73.9
Age							
Traditional	69	69	80.6***	67.8	83**	65	73
Nontraditional	31	31	19.4	32.2	17	35	27
Gender							
Male	51	54	48	52	45	NA	NA
Female	49	46	52	48	55	NA	NA
Race							
White	70.0	71.0	68.0	NA	NA	72.9	66.9
Hispanic	15.0	11.3	15.7	NA	NA	16.9	13.2
Black	9.2	6.5	11.8	NA	NA	5.1	13.2
Other	5.8	11.2	4.5	NA	NA	5.1	6.7
Age, Mean	24.2	26.4	22.9****	25	22.5**	24.4	24.1
Exp. Grade (INT1)							
A	54.0	67.7	49.1	58.4	36.4**	54.6	52.9
B	43.3	27.7	49.1	39.2	58.2	42.3	44.6
C	2.7	4.6	1.8	2.4	5.4	3.1	2.5
Employed							
Yes	74.2	67.2	74.4	76.5	67.2	74.6	73.6
Hours (avg.)	27.2	29.2	25.5	28.4	24.5*	27.8	26.6
Course Load (Hrs)							
Average	12.9	12.5	13.5*	12.7	13.4	13.2	12.8
Time							
Average (min.)	32.2	36.1	29.2	30.7	31.2	31.4	33.3
Completed Course (%)	74	78.5	72.0	75	75.9	75.6	72.2
Avg. Grade (INT1)	2.6	2.9	2.5*	2.8	2.6**	2.6	2.7
A	12.4	12.3	11.5	17.3	0.0	9.9	14.3
B	32.4	47.7	26.7	31.5	31.0	37.5	27.8
C	20.8	13.8	23.6	19.0	31.0	18.3	23.8
D	6.6	4.6	7.9	5.4	12.2	7.6	5.6
F/W	27.8	21.6	30.3	26.8	25.8	26.7	28.5

Notes: * p<.05; ** p<.01; *** p<.001; **** p<.0001

Table 2: Comparison of Racial Components of Sample

(Probabilities for one-way ANOVA's)

<u>Variables</u>	<u>White versus Black</u>	<u>White versus Hispanic</u>	<u>Black versus Hispanic</u>	<u>Majority versus Minority</u>
College GPA	.135	.186	.169	.011
Grade (PRIN1)	.273	.015	.093	.016
Expectations	.012	.023	.170	.004
Pretest Score	.402	.455	.209	.076
Grade (INT1)	.135	.001	.014	.001

(standardized)

Table 3: OLS Regression Results

Standardized Final Grade is the Dependent Variable

<u>Variable</u>	<u>Coefficient</u>	<u>Standard error</u>	<u>T-score</u>	<u>Probability</u>
LOC	.0536	.1492	.359	.7199
PRIN1	.2335	.0899	2.595	.0105
SCORE	.0131	.0196	.666	.5068
RACE	.2682	.1481	1.811	.0725
LOAD	-.0260	.0216	-1.207	.2295
EXPECT	.1345	.1235	1.089	.2781
GPAC	.5951	.1293	4.603	.0000
AGE	.3999	.1568	2.550	.0119

Model F	10.837
Probability	.0000
R Square	.40195
Adjusted R Square	.3649

LOC	location students took first accounting principles. 1=traditional student, 0=2-year transfer student
PRIN1	grade in first accounting principles course. A=4, B=3, C=2, D=1.
SCORE	numerical score on pretest.
RACE	majority=1, minority=0
LOAD	semester hour course load
EXPECT	grade expected in Intermediate 1. A=4, B=3, C=2, D=1.
GPAC	grade point average reported by students.
AGE	age category of students. 1=traditional student, 0=nontraditional student (25 and above)