Early Career Interest Development in Accounting: The Effect of Race after Controlling Math Performance and Gender

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Abstract

The under-representation of African Americans in the field of accounting in the United States remains to be a serious concern. In order to tackle the issue of diversity shortage in the accounting field, this study investigates whether there are racial differences in the development of accounting career interests in the early stages of life, and whether the early career interest development is time-invariant. By using the propensity scores approach, we find that African-American students have greater accounting career interests than Caucasian students both before and after controlling for the potential influence of math performance and gender. Our results also suggest that accounting career interest development of adolescents changes between 8th and 10th grades when students' math performance and gender are controlled. The findings of this study have important implications to guide the practice and research of school career counselors, educators and parents**.**

Keywords: Racial diversity, Accounting career interests, Stability of career interests, Math performance, Gender

1. Introduction

Over the past three decades, the American Institute of Certified Public Accountants (AICPA) and accounting firms have recognized the importance of racial and ethnical diversity in the accounting profession. First, as minority groups continue to comprise a substantial percentage of the U.S. population and business owners, the ethnic market is becoming more and more lucrative for the service industry, including accounting firms. A culturally diverse accounting firm may be able to serve its ethnic minority clients better, hence, improve customer satisfaction. Secondly, because the American society is undergoing a fundamental change in its racial and ethnical composition, in a general level, the nature of its workforce is also changing dramatically. Nowadays, one has to acknowledge that a racially diverse workforce has become a business reality. In response to these changes, creating a diverse working environment may demonstrate sensitivity to cultural differences and enhance employee morale. Thirdly, a diverse accounting firm can attract more minority employees who value cultural diversity. The involvement of highly qualified minority employees can directly contribute to the business success of the accounting firm.

Since accounting professionals have recognized the importance of racial diversity in accounting, over the past 30 years, various efforts have been made to increase the African-American representation in accounting. For example, scholarships, doctoral fellowships, and faculty development seminars are provided commonly for college minority students (AICPA, 2009a). Also, numerous articles have been published to place emphasis on the importance of a diverse workforce, and to propose ideas about how to create a more fair working environment and how to avoid

biased employer decisions. However, the success of such efforts has been limited. Today, there is still a serious problem of under-representation of African Americans in the accounting field. For example, evidence from Nelson et al. (2002) indicates a decline in the number of African-American students majoring in accounting between 1995 and 2000. According to Hermanson et al.(2002), while the recruitment of ethnic minorities taken as a whole is proportionally consistent with the overall population, there is an overrepresentation of Asian-American entrants and underrepresentation of both African–American and Hispanic-American entrants. A recent study conducted by the AICPA also reveals that the enrollment of African-American students in accounting programs has remained virtually unchanged since 2004, and African Americans comprised only 7% of all new accounting graduates and 4% of all new hires by CPA firms in the academic year of 2007-2008 (AICPA, 2009b; James & Hill, 2009).

The problem of diversity shortage in the accounting field might be attributed to a number of factors. Because career interest development is the very first step toward pursuing an actual career, it is reasonable to examine the diversity shortage in accounting by looking at racial differences in the development stage of career interests. According to the existing literature (Wimberly & Noeth, 2004; Tracey & Robbins, 2005), students start developing occupational interests as early as the 8th grade. In this respect, measuring and understanding racial differences in accounting interests of middle and high school students may help shed light on the issue of under-representation of African Americans in the field.

In order to determine if there are racial differences among students regarding their early career interests in accounting, it is important to control for other potential covariates which may contribute to the development stage of one's career interests. According to the Social Cognitive Theory (Lent et al., 1996), academic performance is an important factor which is positively associated with the development of career interests. The empirical evidence also supports this proposal. For instance, Smith (2002) reports that the academic performance is a significant predictor of career interests in information technology. Even though no research has been conducted to investigate the impact of academic performance on early career interest development in accounting, a number of studies (Bartlett et al. 1993; Gul & Fong, 1993; Eskew & Faley, 1988) find that previous academic performance in math has a positive and significant effect on students' performance in introductory accounting courses. Based on this finding, we argue that academic achievement in math may have a significant impact on students' career interests in accounting on the assumption that students who perform well in math courses are more likely to show interest in accounting, regardless of their race.

The effect of gender differences on career interests in accounting is also analyzed in this paper. According to the 2004 report published by the AICPA (AICPA, 2004), women have made up the majority of accounting graduates since the mid-1990s. In fact, empirical evidence shows that a rapid growth in the number of women in the accounting profession took place in the past twenty years. Females made up 39% of all accountants and auditors in 1983, 44.1% in 1985, and 52.1% in 1995. As of 2010, 61.1% of all accountants and auditors are females and over 50% of all accounting graduates have been females since 1986. Also, by 2004, females constituted 56% of all new entrants into public accounting (Keeffe, 2010; AICPA, 2004). This observed gender difference in accounting career choices may indicate that females have stronger interests in accounting than males.

The first purpose of the study is to investigate if racial differences in accounting career interests exist in the early stages of life after controlling for math performance and gender. When comparing the career interests in accounting between African American and Caucasian students, we use the propensity score approach to adjust group differences caused by math performance and gender. We also investigate the changes in accounting career interests of adolescents over time. To our surprise, we find that African-American students have significantly stronger interests in accounting than Caucasian students, before and after controlling for the effects of math performance and gender. With respect to changes of career interests in accounting over time, we find that 8th graders show stronger interests in accounting than 10th graders regardless of race after controlling for math performance and gender. However, there is no significant difference between 8th and 10th graders when math performance and gender are not controlled. Our findings may help create relevant intervention programs to improve the issue of under-representation of African Americans in the accounting profession.

The rest of the article is organized as follows. In the next section, we present the two hypotheses. The third section contains the research method and the fourth section presents the results. We discuss the results, implications and provide suggestions for future research in the final section.

2. Hypotheses

We first aim to investigate whether racial differences have any impact on accounting career interests in one's early stages of life. Since previous studies have suggested that math performance has a significant effect on students'

performance in accounting courses (Bartlett et al, 1993; Gul & Gong, 1993), it is possible that math performance may have a significant impact on students' career interest development in accounting. On the other hand, no specific research has been conducted to examine the impact of gender on early career interest development in accounting. However, as mentioned in the literature review above, the rapid growth in the number of women entering the accounting field may indicate that females have a stronger interest in accounting than males. Therefore, based on the potential effects of math performance and gender on accounting career interests, we expect a baseline difference caused by those covariates. In this regard, we look at the effect of racial differences on the development of career interests in accounting after controlling for these variables. Accordingly, we present:

Hypothesis 1: There are no racial differences in career interests in accounting when differences in math performance and gender are controlled for.

In addition to understanding racial differences in accounting career preferences, we also examine how accounting career interests of adolescents evolve and develop. Many career development theories address interest development over a certain time period. For example, researchers studying the construct of person-environment match (Assouline & Meir, 1987; Spokane, 1985) proposed that interests themselves evolve over time. Individuals, especially adolescents, are hypothesized to become more realistic with increasing age. However, most of the studies on career development focus on adults and a little is known about career interest changes in one's early years of life. Thus, the second purpose of the study is to investigate the nature of changes in accounting career interests of adolescents after controlling for math performance and gender. Based on the previous studies about adults' career interest development, we assume the career development of adolescents is not time-invariant. Therefore, we present:

Hypothesis 2: Accounting career interests of adolescents change from 8th to 10th grade.

3. Method

3.1 Propensity Score

In order to control for the effect of math performance and gender, we use propensity score analysis and adjust group differences caused by the two potentially influential factors. A propensity score is the conditional probability that a person will be in one condition rather than another given a set of observed covariates used to predict condition (Rosenbaum & Rubin, 1983). It can be thought of a scalar summary of covariate vectors ranging from 0 to 1. In our study, the goal of propensity score analysis is to balance nonequivalent African-American and non-African American groups on observed covariates of math performance and gender in order to get more accurate estimates of racial effects by comparing groups on units with similar propensity scores. Individuals from different groups with the same propensity scores indicate that covariate variables (i.e., math performance and gender) are controlled for, and conditions (i.e., African American vs. non-African American) are conditionally comparable. The most commonly used method for computing propensity scores is the logistic regression analysis with observed covariates included as predictors and the treatment assignment (i.e., 0 and 1) included as the dependent variable. The predicted probabilities of group membership from logistic regression are propensity scores.

3.2 Measurement and Analysis

The data from the EXPLORE and the PLAN test packages provide an opportunity to examine the adolescent career interests as well as its development. These packages are specifically designed by the American College Testing (ACT) for 8th and 10th grade students for the purpose of measuring students' academic longitudinal development. The content of the two tests is similar to the ACT test. Both tests cover the subjects of English, math, reading, and science. When students take either the EXPORE test or the PLAN test, they also take the UNIACT Interest Inventory Survey as part of the test protocol. The UNIACT was introduced in 1977 (and revised in 1989) and is based on Holland's VPI model. It is intended to serve students in the early stages of career planning or re-planning in terms of identifying relevant career paths (ACT, 2006). The UNIACT contains a total of 90 items and uses a three-choice response format (i.e., dislike, indifferent' and like). Since our study focuses on measuring career interests in accounting, we selected the items in UNIACT which ask about job activities relevant to accounting, auditing and tax. In this respect, the scores on those items provide a relevant recourse to measure career interests in accounting. The selected items include the following:

1) Calculate the interest on a loan
2) Keep expense account records
3) Prepare income tax returns

4) Find errors in a financial account
5) Set up a bookkeeping system
6) Prepare and interpret financial statements
7) Figure shipping costs for catalog orders
8) Take inventory in a store
9) Handle money transactions
10) Look for errors in the draft of a report
11) Sort, count, and store supplies
12) Collect installment payments
13) Prepare a budget for a service, civic, or similar group
14) Make charts or graphs
15) Plan a monthly budget

The possible score for each item is 1, 2, or 3 with 1 indicating the lowest score. The sum of scores ranges from 15 to 45 and is employed as the dependent.

3.3 Survey participants

Archival student assessment data from the Memphis City Schools are used in the study. The data comes from 2813 students who took the Explore test in the 2006–2007 school year when they were 8th graders, and the PLAN test in the 2008–2009 school year when they were 10th graders. Only Caucasian and African American students were included in the survey. There were 2557 African-American (1537 females and 1020 males) and 256 Caucasian students (132 females and 124 males). After excluding those students who had missing information on gender or had no complete career interest scores in accounting, only 2028 students were included in the data analysis. The average math score of the EXPLORE test is 16.55, and the PLAN test is 18.50. We compute the propensity score of each student by using the logistic model with gender and math performance in the EXPLORE test as predictors, and whether or not being African American as the dependent variable.

The Logistic modeling employed in the present study can be expressed as:

$$\ln\left(\frac{\mathrm{p(being\ African\ American)}}{1-\mathrm{p(being\ African\ American)}}\right)=\beta_0+\beta_1X_1+\beta_2X_2$$

Two factors serve as predictors, X_1 indicates gender, X_2 represents math performance. The intercept β_0 is the ln (odds) of being assigned to the treatment group when all Xs are zero. βs estimate the change in the ln (odds) of being assigned to the African-American group per unit increase in variables X_1 and X_2. Finally, we keep all Caucasian students and select only those African-American students whose propensity scores match Caucasian students.

4. Results

The study uses a 2x2 design with race (Africa American versus Caucasian) as the between-subject factor and test version (the EXPLORE test for 8th graders versus the PLAN test for 10th graders) as the within-subject factor. We create two separate datasets: the unadjusted dataset includes observations with unbalanced math performance and gender and the adjusted dataset includes all Caucasian students and only those African-American students who can be matched with Caucasian students on math performance and gender by means of propensity scores. The information about the count number, the mean math performance, the average interest scores before and after being adjusted, the statistical results of the mixed ANOVA test and the descriptive propensity scores by race are displayed in Tables 1 through 5.

As shown in Tables 1 and 2, when math performance and gender are adjusted by the propensity score, the mean differences of these variables between African-American and Caucasian students decline. For instance, for African-American students, the unadjusted mean difference between 8th and 10th grades is two points (15 minus 13). After adjusting for the propensity score, the difference decreases to one point (17 minus 16).

When we examine the data before math performance and gender are controlled, we first examine the interaction between race and test version before controlling for the effects of math performance and gender. We fail to find the

interaction effect, indicating that racial differences do not change with the test version. The main effect of race is significant, $F(1, 672) = 27.38$, $p<0.01$, with the mean score of African-American students (24.39) is greater than the mean score of Caucasian students (22.55). The result thus disconfirms the first hypothesis. Similarly, the main effect of test version is not significant indicating that there is no change in career interests in accounting from 8th grade to 10th grade. Hence, this finding does not confirm the second hypothesis.

When we examine the matched data where math performance and gender factors are controlled for and equally distributed between African-American and Caucasian students, we do not find any interaction effect between race and test version. The main effect of race is significant, $F (1, 672) = 18.62$, $p<0.01$, with the mean score for African-American students (24.59) being greater than the mean score for Caucasian students (22.54). This finding disconfirms the first hypothesis. The main effect of the test version is also significant, $F(1,672)=12.51$, $p<0.01$, with 8th graders who took the EXPLORE test (24.07) had greater interests in accounting than 10th graders who took the PLAN test (23.06). This result suggests a significant change in career interests in accounting from 8th grade to 10th grade after students' math performance and gender are controlled for. The second hypothesis then is confirmed.

5. Concluding remarks

While most studies on career interests primarily focus on adults, the literature on career interests of adolescents is limited. This study attempts to examine racial differences in and the development of accounting career interests of adolescents. We find that African-American students have greater career interests in accounting than Caucasian students, and the development of career interests in accounting varies in early stages of adolescence.

The first purpose of this study is to compare the accounting career interests between African-American and Caucasian students. We control for the effect of math performance and gender on accounting career interest development in our study. Our hypothesis is that there is no difference in accounting career interests between African-American and Caucasian students when math performance and gender are controlled for. The results show that African-American students scored significantly higher than Caucasian students in accounting career interests regardless of whether or not math performance and gender are controlled. This finding disconfirms our first hypothesis and is contrary to the common expectation that Caucasian students have greater interests in accounting than African-American students.

James and Hill (2009) find that African-American students are more likely to perceive a match between their personal values and the outcomes provided by a career in accounting. Therefore, they propose that African-American students should be more likely to develop an interest in accounting than Caucasian students. The empirical evidence of the current study is consistent with their conjecture. Our results suggest that although there are more Caucasian students majoring in accounting, this does not necessarily imply that Caucasian students have greater career interests in the field than African-American students, because the relationship between accounting career choice and accounting career interest is likely to be moderated by other factors. A career choice may be influenced by the interest that an individual initially develops during school years, but this choice is also refined throughout one's lifetime by other factors including self-confidence, quantitative ability, family economic status, and cultural values, thus early career interests does not necessarily determine one's future career choice.

The second purpose of the study is to examine whether or not the accounting career interest is developed steadily in the early stages of an individual's life. With respect to accounting career interest changes from 8th grade to 10th grade, the results of this study suggest that math performance and gender play important roles in the development stage. Overall, 8th grade students show stronger interests than 10th graders regardless of their race when math performance and gender are controlled. However, there is no difference between 8th grade and 10th grade students when math performance and gender are not controlled.

The results of this study have important implications for practice and research. Since career interest development is the very first step toward pursuing an actual career, academic researchers and educational professionals have typically focused on helping African-American students develop career interests in accounting in their early years of education in an attempt to address the issue of diversity shortage in the accounting field. However, our study provides evidence that African-American students have greater career interests in accounting than Caucasian students when math performance and gender are controlled for. In this regard, it may be beneficial if career counselors, educators, and parents not only encourage African-American students to develop career interests in accounting but also devise ways to transform those existing interests into actual college majors and, eventually, professional careers in accounting in order to achieve equal representation of African Americans in the field. We also suggest that future studies shed light on factors such as academic and cultural isolation, low self-expectations eroding motivation and performance, unsupportive peers, financial problems, and discrimination which may prevent many

African-American students initially showing interest in accounting from actually pursuing careers in the field. Finally, it may be informative to analyze the same group of students included in the current study as 12th graders in order to shed light on racial differences in accounting career development among high school seniors.

No study comes without limitations and this study is no exception. An ideal study would include a stratified random sample which closely represents the demographic make-up of the US population. However, due to limited data availability, our paper relies on a sample which over-represents and under-represents African-American and Caucasian students, respectively. Although this study did find important racial variability regarding accounting career interests of adolescents, the composition of the sample may limit the extent to which the results may be generalized to all African-American and Caucasian students in the general population.

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Table 1. Demographic and gender distribution among participants.

	Unadjusted		Adjusted	
	Male	Female	Male	Female
African American	1202	826	80	89
Caucasian	84	85	84	85

Table 2. Mean math score

	Unadjusted		Adjusted	
	8th grade	10th grade	8th grade	10th grade
African American	13	15	16	17
Caucasian	17	20	17	20

Table 3. Career interests score in accounting

	Unadjusted			Adjusted		
	8th grade	10th grade	Total	8th grade	10th grade	Total
African American	24.89	23.93	24.39	25.10	24.08	24.58
Caucasian	23.02	22.04	22.55	24.08	22.04	22.54

Table 4. Results of mixed ANOVA test

Factor	F(Unadjusted)	F (Adjusted)
Race	27.38**	18.62**
Test version	0.38	12.51**
Race*Test version	0.31	0.42

Note: "**" means that F value is significant ($p < .05$)

Table 5. Mean propensity scores by race

	Unadjusted	Adjusted
African American	0.93	0.82
Caucasian	0.80	0.80