



Differences in Career Outcome Expectations of College Students by Race/Ethnicity and Gender

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ABSTRACT

This study examined how U.S. college students' career outcome expectations—what they hope to get out of their careers—vary by intended career path, racial/ethnic groups, gender, and other individual difference factors. The data were drawn from the Persistence Research in Science and Engineering (PRiSE) survey, a national study of U.S. college students enrolled in college English courses (n = 7505). An exploratory factor analysis revealed four foci of career outcome expectations, which we labeled as follows: extrinsic (rewards are external, such as money or status), work-life balance (work does not consume all of a person's time/energy), pioneering (work is intellectually stimulating and cutting edge), and people-related (work involves working with and helping others). While controlling for career interest, our findings indicate that students' gender and race/ethnicity influence their career outcome expectations in a wide variety of ways. Due to the differences in career outcome expectations associated with student backgrounds and demographics beyond career interest, recruiters and program directors looking to attract more diverse populations may benefit from matching the career outcomes they present and offer with those populations' outcome expectations.

Keywords: *career interest, gender, race/ethnicity, socialization, STEM careers*

INTRODUCTION

Work is a central aspect of an individual's life (Csikszentmihalyi & Schneider, 2000). It contributes to one's positive self-concept, self-satisfaction, happiness, identity, and fulfillment, but also to misery, unhappiness, and boredom (Fogg, 2012; Gagné & Bhave, 2011; Csikszentmihalyi & LeFevre, 1989; Csikszentmihalyi & Schneider, 2000). For most of human history, work has been fairly immutable and divided along gender and class lines. By contrast, young adults in the U.S. today are faced with almost infinite choices in their career paths. The most recent generation to enter the workforce, termed "millennials," faces a unique labor milieu, where they have been raised to believe they can pursue any career they desire. As the freedom to choose an occupation expands, one's job becomes less about inevitability and more about individual preferences, desires, and the fulfillment of individual potential. And while "men and women say they would keep working even if they did not have to," the motivations and values behind why we work have changed over time from an existential necessity to a calling, to social status, to material gain, to personal fulfillment (Csikszentmihalyi & Schneider, 2000, p. 33). Studying which careers youth end up selecting, and for what reasons, has become critically important.

The study of career development began in the early 1900s and continues to be an important field today (McMahon, 2014a). Researchers have long understood the importance of examining the choice and development of careers. In today's diverse work force, implicit and explicit racism and the gender glass ceiling still persist. Career development researchers have begun to shift attention to disadvantaged and underrepresented groups (Hazari et al., 2013b; Riegle-Crumb et al., 2011; Reyes, Kobus, & Gillock, 1999; Sandberg, Ehrhardt, Mellins, Ince, & Meyer-Bahlburg, 1987), and this focus is bound to gain in importance. Some work that particularly targets underrepresented groups in the labor force has hypothesized that the observed gender and race/ethnicity gaps may not result from a lack of opportunities, but a lack of desire (Reyes et al., 1999; Sandberg et al., 1987). This finding highlights the importance of understanding the factors that contribute to an individual's career expectations, and whether they differ by gender or race/ethnicity.

Today, young people are forming certain expectations of what benefits they will get out of their careers (e.g., money, fame, time for family, flexible hours, etc.) and how those outcomes will affect their personal fulfillment. Career outcome expectations (COEs) are what students desire from their future occupations (Fouad & Smith, 1996; Lent, Brown, & Hackett, 1994; Wigfield & Eccles, 1992). We believe that people may vary in what

they want to get out of their careers. This may be different for people who select different careers, or are of different gender, or different racial and ethnic background. For example, COEs may be connected with stereotypes about certain careers (e.g., a health career is regarded as being people related, or a massage therapist is believed to have a more flexible work-life balance).

Empirically, COEs with “people” or “thing” (object) orientations are associated with various college majors. Yang and Barth (2015) found that chemistry, engineering, mathematics, and physical science majors had the lowest ratings for people-oriented careers; jobs affording family and social impact goals mapped to people-orientation; and jobs affording status goals mapped to thing-orientation. Extant research on the importance of finding a work-life balance has mixed results as to whether work-life balance is universally appealing or only desirable to those who can fully take advantage of it (Casper & Buffardi, 2004). For example, one study found specific work benefits, like telecommuting and flexible work time, to have varying importance depending on the individual (Rau & Hyland, 2002), while another study found flexible career paths to be universally attractive (Honeycutt & Rosen, 1997). Additionally, COEs have been empirically associated with gender (Hazari, Sonnert, Sadler, & Shanahan, 2010), but how COEs vary by race/ethnicity has been less studied.

With their increased job possibilities, millennials may be guided more by COEs in their career choice than previous generations. Therefore, it is important to better understand COEs as they become a stronger motivating force for career selection. While this study is limited in making causal claims, it examines the association of individual factors, such as race/ethnicity, gender, and career interests, with COEs. The goal of this study was twofold:

To identify the COEs college students have.

To determine to what extent gender, race/ethnicity, and career interest predict college students’ COEs.

We hypothesize that all three factors are associated with students’ COEs, while focusing on the effects of race/ethnicity and gender. This study is one of a kind in its large-scale investigation of this hypothesis.

Theoretical Framework

Two main themes emerge in the research about COEs and, consequently, career choice: career theories that emphasize dispositional traits to explain individual differences and career theories that emphasize the contextual and environmental, alternatively societal factors, that influence individual differences. There are two major dispositional models:

In Holland's (1997) RIASEC career interest model, individuals orient themselves in varying degrees toward realistic, investigative, artistic, social, enterprising, or conventional (RIASEC) goals for COEs.

People-thing orientation (PTO) looks at the analysis of gender differences through either people-orientations or thing-orientations (Yang & Barth, 2015).

On the other hand, there are also two influential contextual and environmental orientations: Social cognitive career theory (SCCT) accounts for a large portion of the literature about career development and career choice. SCCT was developed in reference to, and shares a similar structure with, Bandura's Social Cognitive Theory, which suggests "people act on their judgments of what they can do, as well as on their beliefs about the likely effects of various actions" (Bandura, 1986, p. 231). SCCT posits self-efficacy, outcome expectations, interests and goals, mediated by environmental and contextual influences as the main predictors of career choice (Lent et al., 1994).

Role conformity theory focuses on contextual and environmental factors (Brown, Darden, Shelton, & Dipoto, 1999; Conkel Ziebell, 2010; Su et al., 2009) and factors that are largely out of an individual's control (Arbona, 1990; Conkel Ziebell, 2010; Constantine et al., 1998; Hanson, 1994). According to this theory, for instance, differences between men and women's career choices result from the socialization of gender norms (Yang & Barth, 2015).

The value of considering individuals and their environment (e.g., society, time) in conjunction is now widely recognized (Betz, Fitzgerald, & Hill, 1989; Conkel Ziebell, 2010; McMahan et al., 2014b), because individual (dispositional) and contextual factors often interact. For example, at the individual level, Blustein's (2011) relational theory of working builds on the constructivist approach to career theory (McMahan, 2014) and puts a greater emphasis on personal agency, meaning making between the individual and their broader context, and narrative discourse. However, it is also recognized that many people have no "choice" in their career development; for these individuals, environmental and societal barriers play a larger role than does personal agency (Brown et al., 1999; Conkel Ziebell, 2010). This difference may be particularly salient for minority groups. Unfortunately, there is a limited amount of research on different racial/ethnic groups' career development, a lacuna that our study was intended to address.

Because societally reinforced gender norms in occupations change slowly, a strong gender norm still suggests that women should be interested primarily in helping-type occupations and men should be primarily interested

in mechanical-type occupations (Arnold, 1993; Riegle-Crumb, Moore, & Ramos-Wada, 2011; Reyes, Kobus, & Gillock, 1999; Su et al., 2009). For example, Yang and Barth (2005) found that on the occupational thing-orientation (a desire to work with objects), men scored higher than women. Conversely, on the occupational people-orientation (a desire to work with people), women scored higher than men. It is important to continue to assess differences between women's and men's interests and attitudes as they select their vocations. Our study contributes to the body of evidence in this area.

Finally, time plays a significant role in career theory. It dictates the emergence of career interests and accounts for the fact that people are interested in different careers at different times in their lives (Arthur, Hall, & Lawrence, 1989). At the individual level, attitudes about careers develop rapidly, mainly in the first couple of decades of life, where interventions may be implemented (Su et al., 2009). A critical time in career interest development is the late-adolescent to early-adult period (Su et al., 2009; Lent et al., 1994). In particular, college age is when students have the greatest opportunity to convert career interests to actual career choices, and career interests at that stage become good predictors of career choice (Sadler et al., 2012; Riegle-Crumb et al., 2010). Hence, our study focuses on college students and their career interests.

LITERATURE REVIEW

The voluminous research on careers has mainly focused on self-efficacy (Adachi, 2004; Lent et al., 1994), identity (Hazari et al., 2010), role models (Hazari et al., 2013a), exposure (Hazari et al., 2010), interest (Hazari et al., 2013a; Hazari, Sadler, & Sonnert, 2013b; Sadler, Sonnert, Hazari, & Tai, 2012), goals (Lent et al., 1994), career choice (Adachi, 2004; Hazari et al., 2010; Lent et al., 1994), much under the general umbrella of social cognitive career theory (SCCT) (Lent et al., 1994). There has been some attention to COEs (e.g., Adachi, 2004; Csikszentmihalyi & Schneider, 2000; Yang & Barth, 2015), along with gender (Arnold, 1993; Sadler et al., 2012; Su, Rounds, & Armstrong, 2009) and race (Hazari et al., 2013b; Riegle-Crumb et al., 2011; Reyes et al., 1999), but it seems fair to say that they have received comparatively little quantitative empirical consideration (Domene, Socholotiuk, & Woitowicz, 2011). Notably, most of the research on gender, race/ethnicity, and careers has been about science, technology, engineering, and mathematics (STEM) careers (see Hazari et al., 2010; Sadler et al., 2012; Riegle-Crumb et al. 2011). In a meta-analysis of gender differences in career development, Su et al. (2009) recognized the importance of future research focusing on variability between racial and ethnic groups.

In a majority of the studies that address COEs, for example, in studies using social cognitive career theory (Lent et al., 1994), the COEs have been predictors of career choice. Not surprisingly, it was found that students who have certain COEs were more likely to persist in a career that they believed would fulfill those expectations (Adachi, 2004; Csikszentmihalyi & Schneider, 2000; Hazari et al., 2010; Lent et al., 1994). For instance, Casper and Buffardi (2004) found that COEs related to schedule flexibility, dependent care assistance, and salary predicted career choice.

The reverse pathway—that is, how career interests predict students' COEs, which is the subject of this paper—has been less studied. This pathway allowed us to place career interests at the same level as race/ethnicity and gender and to conjointly assess the comparative strength of impact of those three predictors on COEs (while controlling for several background variables).

We are aware of no studies of careers that have specifically looked at gender, race/ethnicity, and career interests as predictors for college students' COEs. However, a few noteworthy studies have examined how students' COEs predicted their occupations. Yang and Barth (2015) investigated students' COEs predicting interest in different occupations using both PTO and role congruity theory to examine gender differences in CEMP (computer science, engineering, mathematics, physical sciences) majors of college students ($n = 1848$). They found no significant differences by major in thing orientation (a preference to work with objects rather than with people). However, they did find a significant gender interaction: men in CEMP majors had less interest in working with people than did men in biology or health majors. Interestingly, women interested in CEMP majors had a similar level of people-orientation (preference to work with people rather than objects) to women in the health fields. Yang and Barth similarly found that role congruity theory significantly predicted interest in people-related jobs and thing-related jobs, but that gender only explained less than 1% of the variance in interest. Our study extends their research by using a large national sample that looks at racial/ethnic and gender differences in COEs in addition to differences in COEs by career interest.

Another study examined students' physics identity (whether someone sees themselves as a “physics person”) in relation to their COEs, while controlling for gender and previous physics experiences. With a robust sample size of 3,829 students from 34 randomly selected colleges, Hazari and colleagues (2010) found that college students' physics identity not only predicted their career interests, but also correlated positively with a desire for an intrinsically fulfilling career and negatively with a desire for

personal/family time and working with people. However, the study was limited to only students interested in a career in physics. Our study expands this scope to include health, medicine, and non-science careers in addition to STEM careers.

In a representative cross-sectional study of 3,602 middle and high school students' expectations for the future, Csikszentmihalyi and Schneider (2000) found that male and female students had similar expectations for their academic pathways, occupations, and lifestyles. However, female students expected "their future jobs to be more enjoyable" (p. 77) than did male students. Interestingly, in contrast to the current reality of gender-based pay gaps, female students' salary expectations were similar to male students. There were no significant differences between racial groups and their expectations for well-paying and enjoyable jobs.

In the same study, students were questioned about the occupation they would like to have and the occupation they expected to have. Students became more pragmatic and realistic with age, which supported our rationale of examining students' career interests and COEs at college age. Csikszentmihalyi and Schneider (2000) also found clear gender differences aligned with gender career stereotypes (e.g., boys tended to prefer occupations such as athlete, engineer, or police officer, while girls tended to prefer occupations such as nurse, teacher, or secretary). They also found clear racial and ethnic group differences. For example, Black students more frequently mentioned athlete and lawyer as occupations, Hispanic students mentioned police officer and nurse more frequently, and Asian students mentioned architect, businessperson, doctor, and engineer more frequently than did other student groups.

As a follow-up, students were asked to indicate how important certain COEs were to the job they expected to have in the future. Csikszentmihalyi and Schneider (2000) found students to have distinct COEs that correlated with the occupation they expected to have. This suggests that students may already have some pre-conceived associations of COEs with specific occupations, which also seem to follow occupational stereotypes. Furthermore, this finding appears to indicate that students understand that different jobs afford different opportunities (e.g., future teachers do not expect to be famous or make a lot of money; future doctors do not expect to have a lot of free time). While this finding supports our hypothesis, it has yet to be studied with college students.

Within the same study, Csikszentmihalyi and Schneider (2000) investigated students' motivations (intrinsic, extrinsic, social) for their work, which we define as part of students' COEs. "Intrinsic" motivation for work

included enjoyment, interest, learning something new, taking on a challenge, and inherent talent. “Extrinsic” motivation for work included job security, making money, meeting parental expectations, not falling behind, and learning something useful. A third “social” motivation included impressing friends, doing better than others, and getting respect. These motivations are not necessarily mutually exclusive within a specific occupation. The researchers found 52% of students rated intrinsic motivations the highest in importance to them, 40% rated extrinsic motivation the highest, and only 8% rated social motivations the highest. Surprisingly, female students were more likely than male students to be motivated by extrinsic rewards. Also, Caucasian students were more likely than other racial/ethnic groups to be motivated by intrinsic factors (as opposed to extrinsic factors). Again, these findings support our hypothesis regarding differences in COEs by gender and race; however, these differences have yet to be studied at the college age.

RESEARCH METHOD

Data

The data used in this article were collected as part of the Persistence Research in Science and Engineering (PRiSE) project, a study of students in college English classes that was funded by the National Science Foundation. The project included a 50-question survey developed to examine in-school and out-of-school factors, as well as demographics, which may predict college students’ persistence in science- and engineering-related careers as well as non-science careers. In the fall semester of 2007, responses were obtained from a large national sample of college students ($n = 7505$) from 40 two- and four-year U.S. colleges and universities selected from a stratified random sample that accounted for institution size and type. Additionally, six of the schools were oversampled to ensure adequate representation of students from underrepresented populations (one historically Black college, one Hispanic-serving college, and four women’s colleges). Whereas this dataset was collected a while ago, it remains relevant owing to its unique large size and national scope. Furthermore, the pandemic may have drastically redefined students’ career outcome expectations. This urgently calls for a repetition of this research, for which the results of the present study would constitute a valuable baseline measurement. Students were surveyed in a mandatory college English course in order to generate a sample that included both students who were interested in STEM careers and those who were uninterested. Of the participants, 53% were female. In terms of race/ethnicity, 14% of the respondents were Hispanic, 62% non-Hispanic White, 7% non-

Hispanic Black, 5% non-Hispanic Asian, and 6% non-Hispanic Other, with the remainder providing no information.¹

The PRiSE survey contained 50 items that were validated through focus group discussions with college students and experts in science education. Moreover, to obtain good content validity, the development of the questionnaire had been guided by open-ended responses from 412 science teachers and scientists to a preliminary survey that had the purpose of identifying and incorporating a breadth of hypotheses and views. The survey was pilot tested with 49 students to ensure items, vocabulary, and scaling could be adjusted to reflect the natural variation in experiences. Test-retest reliability of the survey was established by administering the survey to 96 students twice, in an interval of about two to three weeks. Correlation coefficients and Cohen's kappas indicated an overall mean test-retest reliability of .67.

Measures

This study focuses on college students' COEs in relation to their career interest, gender, and race/ethnicity, while controlling for other influences (e.g., socio-economic status).

Dependent variables

The dependent variables in this study are the COEs of college students. These variables were created considering students' answers to 15 items regarding their specific COEs. The 15 items include most of the COEs on the list of important career values in The Career Decision-Making System Revised (excluding only "physical activity," "outdoor work," "risk," "variety," and "work with hands") (Fogg, 2012). Our COE variables were created through an exploratory factor analysis by identifying clusters of original items that could be grouped together. Participants rated the importance of items relating to their future career satisfaction including making money, becoming famous, helping other people, having a leadership role, having job security, working with people (rather than objects), inventing new things, developing new knowledge, having time for family, having time for myself, making my own decisions, having an easy job, having an exciting job, making use of my talents, and having lots of job opportunities. The question read "Rate the following factors in terms of their importance for your future career satisfaction." Participants rated each item on a six-point scale from 1 = "not at all important" to 6 = "very important." A factor analysis using a Varimax rotation grouped most of the items into four factors with two items standing alone (see Table 1).

Table 1
Factor Analysis of Career Outcome Expectations

Item	Pioneering	Extrinsic	Work-Life Balance	People-Related
Inventing new things	0.637	0.269	-0.001	-0.124
Developing new knowledge and skills	0.595	0.092	0.314	0.086
Making use of my talents/abilities	0.463	0.064	0.430	0.130
Having others working under my supervision	0.299	0.588	0.118	0.129
Becoming well known	0.368	0.556	0.052	0.112
Making money	0.086	0.532	0.305	0.045
Having lots of family time	0.013	0.019	0.572	0.432
Having time for myself/friends	0.064	0.074	0.512	0.335
Making my own decisions	0.325	0.238	0.490	0.193
Working in an area with lots of job opportunities	0.273	0.352	0.429	0.118
Having job security	0.043	0.315	0.407	0.161
Working with people rather than objects	0.009	0.124	0.326	0.566
Helping other people	0.133	0.066	0.376	0.486
Having an easy job	-0.029	0.389	0.159	0.135
Having an exciting job	0.118	0.431	0.444	0.144

Bold text indicates that the factor loadings for that item/factor combination were above the threshold of 0.4 to be considered a significant loading, and therefore the item was included in that factor.

Finally, the items constituting a factor were standardized and added and the resulting composite was standardized again to facilitate interpretation. We named the composites extrinsic outcomes, pioneering outcomes, work-life balance outcomes, and people-related outcomes, and excluded two items which did not strongly load onto any of the four factors (“having an easy job” and “having an exciting job”).

Independent variables of interest

Gender was coded as a dummy variable (female = 0, male = 1). Race/ethnicity was coded as one categorical variable (or, equivalently, as separate dummy variables). On the survey, students could identify their ethnicity as Hispanic or non-Hispanic. Students could also identify their racial identity as White, Black, Asian, Native American, Pacific Islander, Other, or

more than one race (indicated by multiple selections). For the purpose of our analyses, all students who indicated they were Hispanic were categorized as Hispanic, regardless of their further racial identification.

Table 2

Career Interest Fields Presented to Students and Their Compositd Groupings

Field	Grouping
Biologist	STEM
Earth/Environmental scientist	
Astronomer	
Chemist	
Physicist	
Engineer	
Computer scientist	
Mathematician	
Science teacher	
Math teacher	
Medical professional	Medicine
Health professional	Health
Other teacher	Non-science
Social scientist (e.g., psychologist, sociologist)	
Businessperson	
Lawyer	
English/Language arts specialist	
Other non-science related career	

The other racial/ethnic categories thus included non-Hispanic White, non-Hispanic Black, non-Hispanic Asian, and Other. Too few students indicated their racial identity as Native American or Pacific Islander to be included independently in our analysis. Therefore, the racial category labeled “Other” includes students who indicated they were non-Hispanic Native American, non-Hispanic Pacific Islander, Other, and more than one race.

On the survey, students had 19 options of career interests or career interest combinations (see Table 2). We collapsed students’ responses into four composite variables of broader fields: medicine, health, STEM, and non-science (i.e., not medicine, health, or STEM). The breakdown of career

interests was: 11% medicine, 13% health, 26% STEM, and 50% non-science careers. We kept medicine and health as separate variables because on certain items (especially those belonging to the pioneering factor), students interested in medicine responded markedly differently from students interested in health careers.

Control variables

In addition to our variables of interest, we included several other variables to control for differences in students' backgrounds and personalities. First, we controlled for parental education as an indicator of socioeconomic-related factors, which have previously been found to have an effect on career interest (Csikszentmihalyi & Schneider, 2000). Students indicated their parents' highest level of education on a scale: 0 = did not finish high school to 4 = completed a master's degree or higher. Parental education was calculated by averaging the education level of both parents, taking into account students who had only one parent. These scores were normalized to have a mean of zero and a standard deviation of one before regression.

On the survey, students could indicate whether they or their parents were born in the U.S. or not. From these responses, we grouped students into two categories: immigrant or non-immigrant. We described students as immigrants if students indicated both themselves and their parents as non-U.S. born. We described students as non-immigrants if they indicated that they and/or at least one parent were born in the U.S. These definitions align with the common definition of "immigrant" by the U.S. Citizenship and Immigration Services (2015).

As an indicator of overall ability in school, we used students' overall SAT or ACT scores. ACT scores were mapped onto the SAT scale according to College Board (1999). Scores were divided by 100 prior to modelling, so any coefficients are "per 100 points."

We included a personality trait as a control variable because we also expected that the extent to which students are introverted or extroverted might, for example, influence the extent to which they desire a career working with people as opposed to objects. On the survey, students rated their personality on a scale of 1 = introverted to 6 = extroverted. These scores were normalized to have a mean of zero and a standard deviation of one before regression. Of course, this variable is not a psychometrically valid and reliable way of determining this trait; however, if it makes a difference, it may indicate an avenue of further research.

Main Analysis

We carried out a linear regression with each of the four COEs—pioneering, extrinsic, work-life balance, and people-related outcomes—as dependent variables. We included our variables of interest and control variables in the models to analyze any main effects. We furthermore tested for interaction effects. P-values were adjusted with a Bonferroni correction to account for multiple comparisons.

Missing data

Our data contained several variables with missing data. The variable with the most missing data was the overall SAT/ACT score (2,073 missing). To avoid the compounded data loss through listwise deleting that would have summed to 4,040 missing observations, we performed a multiple imputation (Rubin, 1996) that resulted in five complete datasets, each with 7505 complete responses that were pooled for analysis. In our imputation, we included each of the variables considered in our regression model, with the addition of several related variables (e.g., intended career at middle school, beginning of high school, end of high school, and in college).

Normalized data

After completing our primary analyses, we found particular racial/ethnic groups--black and Hispanic students--to display consistently significant elevated results across each COE. While the COEs are not mutually exclusive and it is possible for students to show a high (or low) interest in all COEs, normalizing the COE scores for race/ethnicity allowed us to determine the effects of race/ethnicity, net of differences in the overall levels of COEs.

RESULTS

Main Effects

A summary of the main effects from a linear regression analysis of each of the four COEs—*pioneering outcomes*, *extrinsic outcomes*, *work-life balance outcomes*, and *people-related outcomes*—can be found in Table 3. To compare across variables, the standardized coefficient (β) is reported.

We found that Asian students placed greater importance on extrinsic outcomes compared with White students ($\beta = 0.393$, $p < .001$) but showed no differences on the other three outcome expectations. Black students tended to place a higher value on every COE than did White students (pioneering $\beta = 0.478$, extrinsic $\beta = 0.618$, work-life balance $\beta = 0.280$, people-related $\beta = 0.193$, all $p < .001$). Likewise, Hispanic students rated every COE as more

important than White students did (pioneering $\beta = 0.273$, extrinsic $\beta = 0.388$, work-life balance $\beta = 0.191$, people-related $\beta = 0.173$, all $p < .001$). We found no statistically significant differences between students we categorized as “Other” (non-Hispanic Native American or Pacific Islander students, another racial group, and those who indicated more than one racial group) and White students.

Table 3
Main Effects Regression of Career Outcome Expectations

	Pioneering	Extrinsic	Work-Life Balance	People-Related
<i>Career Interest</i> (ref: non-STEM)				
Medicine	.137 **	.024	.035	.287 ***
Health	.000	-.055	.132 **	.307 ***
STEM	.226 ***	-.065	-.040	-.153 ***
<i>Race/Ethnicity</i> (ref: White)				
Asian	.064	.393 ***	.024	.030
Black	.478 ***	.618 ***	.280 ***	.193 ***
Hispanic	.273 ***	.388 ***	.191 ***	.173 ***
Other	.057	.097	.066	.016
Male	.169 ***	.279 ***	-.074 *	-.397 ***
Immigrant	.221 ***	.154 **	-.071	.065
SAT (per 100 pts)	.007	-.047 ***	-.020 *	-.023
Parental Ed. (0-4)	-.027	-.026	-.043 **	-.023
Extraversion (1-6)	.065 ***	.179 ***	.121 ***	.189 ***

Note. Standardized coefficients (β) are reported. Pioneering factor = invent, develop new knowledge, use talent; Extrinsic factor = lead others, acquire fame, money; Work-Life Balance factor = have time for family, time for myself, make own decisions, have job opportunities, job security; People-Related factor = work with people, help others.

* $p < .05$, ** $p < .01$, *** $p < .001$. P-values have been adjusted for multiple comparisons. Regression estimates without asterisks were not found to be statistically significant.

Compared with students who were primarily interested in a non-science career, students who were most interested in a career in medicine showed higher ratings, on average, for pioneering ($\beta = 0.137$, $p < .01$) and people-related ($\beta = 0.287$, $p < .001$) outcomes. Students interested in a career in health similarly had higher ratings for people-related outcomes ($\beta = 0.307$, $p < .001$), but also showed a higher importance of work-life balance outcomes ($\beta = 0.132$, $p < .01$). By contrast, their ratings for pioneering outcomes were not elevated. Students interested in a STEM career placed higher importance on pioneering outcomes ($\beta = 0.226$, $p < .001$), but lower importance on people-related outcomes ($\beta = -0.153$, $p < .001$), compared with students interested in a non-STEM career.

Male students placed a higher importance on pioneering ($\beta = 0.169$, $p < .001$) and extrinsic ($\beta = 0.279$, $p < .001$) outcomes compared with female students, and a lower importance on work-life balance ($\beta = -0.074$, $p < .05$) and people-related ($\beta = -0.397$, $p < .001$) outcomes. Students who were classified as “immigrant” placed a higher importance on pioneering ($\beta = 0.221$, $p < .001$) and extrinsic ($\beta = 0.154$, $p < .01$) outcomes compared with students who were either themselves or had at least one parent born in the U.S. Students with higher SAT/ACT scores placed lower importance on extrinsic ($\beta = -0.047$, $p < .001$) and work-life balance ($\beta = -0.020$, $p < .05$) outcomes. Students who reported higher average parental education placed lower importance on work-life balance outcomes ($\beta = -0.043$, $p < .01$).

Table 4
Interaction Effects Regression of Career Outcome Expectations

	Pioneering	Extrinsic	Work-Life Balance	People-Related
<i>Career Interest</i> (ref: non-STEM)				
Medicine	.189 **	.161 *	.041	.295 ***
Health	-.056	-.031	.087	.375 ***
STEM	.144 *	-.059	-.097	-.105
<i>Race/Ethnicity</i> (ref: White)				
Asian	.100	.510 ***	-.065	.013
Black	.513 ***	.667 ***	.254 *	.229 **
Hispanic	.299 ***	.442 ***	.182 **	.171 ***
Other	.198	.173	-.017	.049
Male	.106 **	.285 ***	-.100 *	-.378 ***
Immigrant	.229 ***	.145 *	-.073	.063
SAT (per 100 pts)	.006	-.047 ***	-.020	-.022
Parental Ed. (0-4)	-.027	-.025	-.044 **	-.022
Extraversion (1-6)	.052 **	.136 ***	.090 ***	.162 ***
Male x STEM	.223 **			
Male x Extraversion		.090 ***	.065 *	
Asian x Medicine	-.458 *			
Other x STEM	-.424 **			

Note. Standardized coefficients (β) are reported. Pioneering factor = invent, develop new knowledge, use talent; Extrinsic factor = lead others, acquire fame, money; Work-Life Balance factor = have time for family, time for myself, make own decisions, have job opportunities, job security; People-Related factor = work with people, help others.

* $p < .05$, ** $p < .01$, *** $p < .001$. P-values have been adjusted for multiple comparisons.

Regression estimates without asterisks were not found to be statistically significant.

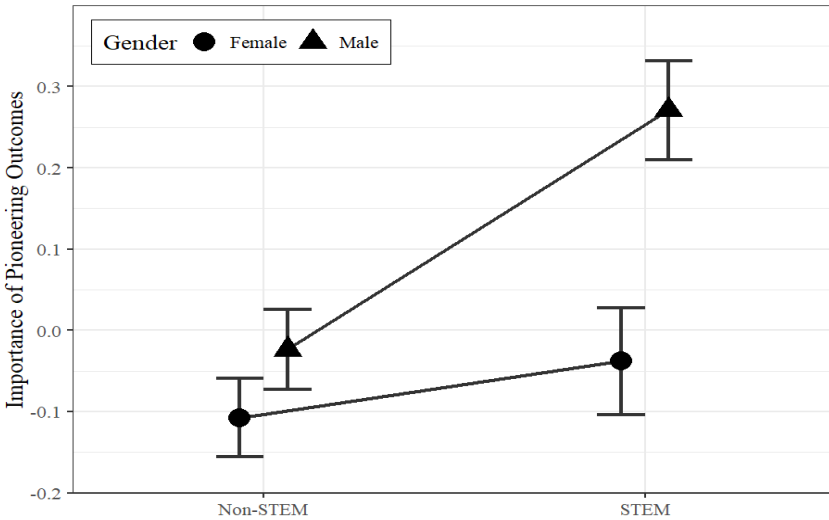
Interaction Effects

A second set of linear regression analyses included interaction effects (see Table 4). Five interactions were significant. Firstly, we found three significant interactions involving career interest variables associated with pioneering outcomes.

There was an interaction between career interest in STEM and gender ($\beta = .223, p < .001$), such that pioneering outcomes appeared to be more important for male students interested in a career in STEM than for female students interested in a STEM career (see Figure 1), although there was little difference in the importance of pioneering factors between male and female students who had no interest in a STEM career.

Figure 1

Differences in the importance of pioneering outcomes for male and female participants primarily interested in a career in a STEM vs. Non-STEM field. Shaded bands show standard error in the mean estimate.

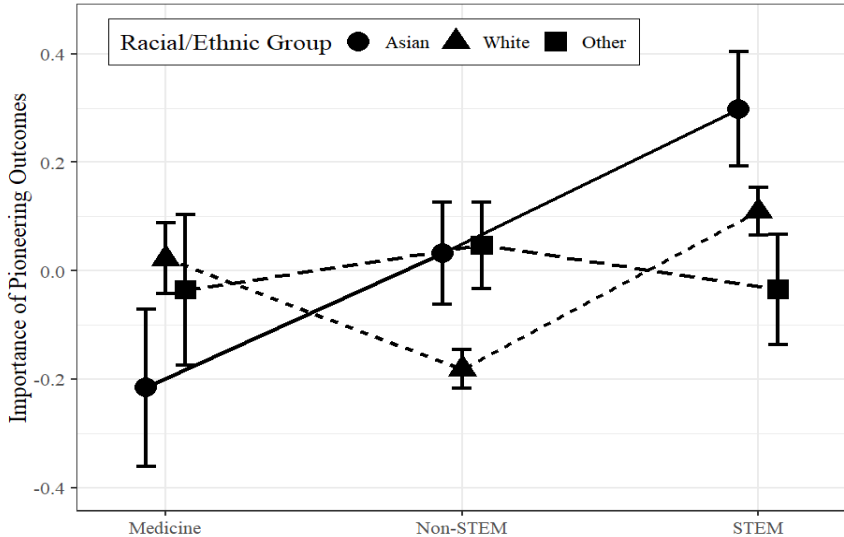


The other two interactions were between race/ethnicity and career interest, specifically between career interest in medicine and Asian students (compared with White students) and between career interest in STEM and students classified as Other (compared with White students). The effect of these interactions is shown in Figure 2. Among those who were intending a career in medicine, students who identified as White valued pioneering outcomes more than students who identified as Asian, but among those who did not want to go into medicine, we found no difference. For students

intending a career in STEM, students classified as Other placed lower importance on pioneering COEs than did students who identified as White.

Figure 2

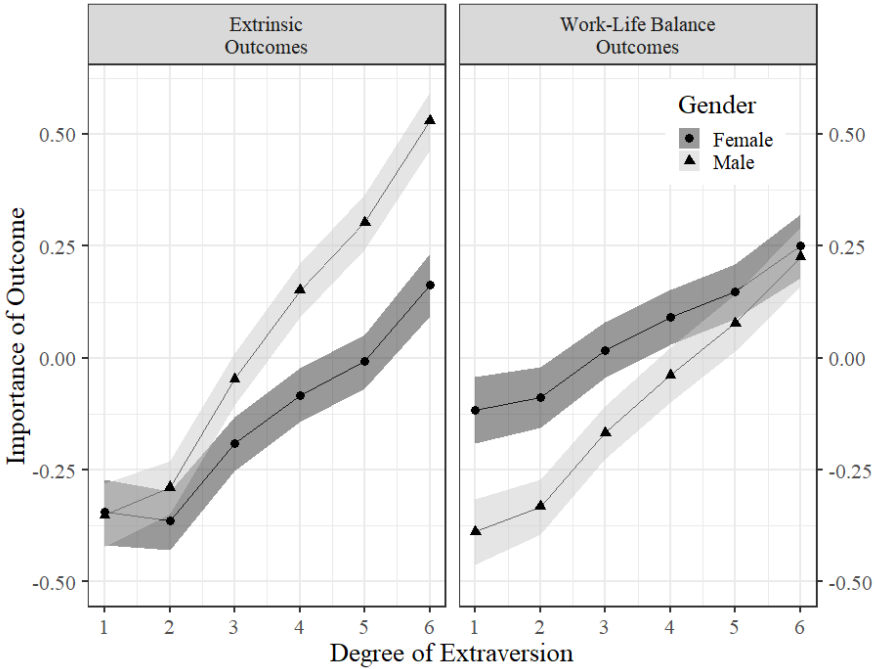
Differences in the importance of pioneering factors for White students, Asian students, and students of other racial/ethnic groups who are primarily interested in careers in STEM, Medicine, and Non-STEM. Vertical bars show standard error of the mean estimate.



Secondly, we found a statistically significant interaction between gender and extraversion for extrinsic outcomes ($\beta = .090, p \leq .001$) and work-life balance outcomes ($\beta = .065, p \leq .05$). Figure 3 shows that more introverted students do not appear to particularly care about extrinsic outcomes, regardless of gender. Furthermore, while extraverted students tended to find extrinsic outcomes more important than introverted students, extroverted male students rated extrinsic outcomes as even more important than extroverted female students. For work-life balance outcomes, we find the opposite effect: highly extroverted students, regardless of gender, valued these outcomes equally highly, while more introverted male students placed much less importance on this outcome than similarly introverted female students. There were no interaction effects for people related COEs.

Figure 3

Differences in extrinsic and work-life balance factors for male and female students according to their self-reported extraversion. Shaded bands show standard error of the mean estimate. Mean extraversions for all participants was 3.91, with a standard deviation of 1.17.



Main Effects Renormalized for Race/Ethnicity

As mentioned above, we noticed that both Hispanic and Black students rated all four COEs significantly higher than did other students. To determine if Hispanic or Black students simply rated everything more highly, or if there were, in fact, differences by race/ethnicity for individual COEs, we normalized each of the COEs scores by race. To normalize the scores, we subtracted the mean score of all COEs for each racial/ethnic group from an individual student's response, respectively. Linear regressions with the normalized data reduced but did not completely eliminate the associations with racial or ethnic identity (see Table 5).

We no longer found any significant differences in pioneering outcomes associated with student race/ethnicity. The effects on the importance of extrinsic outcomes for Asian, Black, and Hispanic students

were all reduced, compared with the unnormalized model. Before normalizing, Black and Hispanic students had placed higher importance on both work-life balance and people-related outcomes than did White students, but after normalizing, Black and Hispanic students showed lower average ratings for these outcomes. All interaction effects persisted unchanged after normalizing the data, as the interaction effects in linear models are invariant under linear transformations of the data.

Table 5

Race/Ethnicity Renormalized Regression of Career Outcome Expectations

	Pioneering	Extrinsic	Work-Life Balance	People-Related
<i>Career Interest</i> (ref: non-STEM)				
Medicine	.137 **	.024	.035	.287 ***
Health	.000	-.055	.132 **	.307 ***
STEM	.226 ***	-.065	-.040	-.153 ***
<i>Race/Ethnicity</i> (ref: White)				
Asian (-0.125)	-.061	.268 ***	-.101	-.095
Black (-0.411)	.068	.207 ***	-.131 *	-.127 ***
Hispanic (-0.296)	-.023	.092 *	-.105 *	-.123 **
Other (-0.057)	.000	.040	-.123	-.040
Male	.169 ***	.279 ***	-.074 *	-.397 ***
Immigrant	.221 ***	.154 **	-.071	.065
SAT (per 100 pts)	.007	-.047 ***	-.020 *	-.023
Parental Ed. (0-4)	-.027	-.026	-.043 **	.023
Extraversion (1-6)	.065 ***	.179 ***	.121 ***	.189 ***

Note. Standardized coefficients (β) are reported. Pioneering factor = invent, develop new knowledge, use talent; Extrinsic factor = lead others, acquire fame money; Work-Life Balance factor = have time for family, time for myself, make own decisions, have job opportunities, job security; People-Related factor = work with people, help others. The parentheticals for Race/Ethnicity in the first column indicate the differences in overall group means used for renormalization. Only the coefficients for terms involving race/ethnicity (and not an interaction) were affected by the renormalization and are highlighted for emphasis.

* $p < .05$, ** $p < .01$, *** $p < .001$. P-values have been adjusted for multiple comparisons.

Regression estimates without asterisks were not found to be statistically significant.

DISCUSSION

Consistent with the work of Csikszentmihalyi and Schneider (2004), we found that college students vary in what they hope to get out of their careers, which we termed their COEs. Specifically, we found that college students' COEs differed depending on their gender, racial or ethnic background, and desired occupation, even after controlling for other

background and personality factors. Additionally, some differences by race and ethnicity persisted after normalizing the data in this respect.

Career Interests

Because we inverted the traditional relationship between COE and career interest in our analysis, this dimension is less interesting than the others because these associations have already been well studied in prior literature. We included them in our analysis primarily as controls to more properly isolate the effects of the other demographic variables.

Race and Ethnicity

One overall effect we see in comparing the results of our normalized and unnormalized regressions is that Black and Hispanic students tend to place a higher importance on various COEs than White students do. These students are invested in their careers and have stronger ideas about what they want from their careers.

After normalizing, we found differences in the relative importance of several factors. Asian, Black, and Hispanic students placed greater importance on extrinsic outcomes than did white students, while White students rated work-life balance and people-related outcomes higher than did Black and Hispanic students. It is not clear why that may be the case and future research may want to further examine this finding. One possible explanation is that there may be more importance placed on the traditional (i.e., extrinsic) outcomes of success for minority students when those outcomes have traditionally been more difficult to achieve, compared with their White counterparts. In other words, a long-standing condition of systemic disadvantages and even oppression may have heightened the focus among the Black and Hispanic students on extrinsic outcomes as avenues of advancement for themselves and their communities.

Gender

We found differences in the importance male and female students placed on all four COEs and additional differences associated with their levels of extraversion. These results indicate differences in values and priorities of young men and women, and these differences exist beyond their preferences for one kind of career. For example, in alignment with a longitudinal study of female valedictorian high-school students who increasingly reduced their workload to make preparations for family time as they advanced in their careers (Arnold, 1993), we found that female students value a work-life balance more strongly compared with male students.

Why do these differences exist? Why were male students more interested in pioneering career outcomes than female students, separately from any differences in their preferences for careers typically associated with those outcomes? We suspect that these differences are a result of differences in childhood socialization, such as boys being more frequently encouraged than girls to experiment and tinker, with toys to support such behaviors, than girls. Moreover, male students' strong desire for extrinsic outcomes, in comparison with female students, aligns with the idea that money, fame, and leadership are the keys to success for men. These aspects resonate with deep-seated cultural definitions of what it means to "succeed" as a man.

A person's extraversion and their gender interacted to predict interest in extrinsic and work-life balance COEs. The differences in extrinsic COEs exist primarily between the more extroverted men and women, while the introverted students expressed more similar preference for these outcomes. Meanwhile, the differences in work-life balance existed primarily between the introverted students, with more extroverted male and female students indicating similar preferences. These findings may have implications for gender differences in income and leadership positions, which are extrinsic career outcomes. However, further research is needed to understand why there are greater differences for extroverted individuals compared to introverted individuals.

Again, we should note that our simple measure of introversion/extroversion was not psychometrically valid so future research should explore whether these results hold up when measures of higher quality are used.

Other Demographic Factors

Other demographic factors were used as control variables, but they do tell an interesting story. Parental education level is traditionally used as an indicator of socio-economic status (SES), as a proxy for their careers and income levels. Our study found that students with parents who had less total amount of education were more interested in a work-life balance. This finding might be owed to these students experiencing difficult work-life balances in their families while growing up. Another interesting finding is that the better students performed on the SAT/ACT, the weaker was their desire for extrinsic rewards in their career. It may be the case that 'good' students, or those who perform better on standardized tests, are more concerned with intellectual rewards. On the other hand, poor performing students may feel more pressure to find a more traditional form of success (i.e., extrinsic rewards) when their academic ability does not guarantee attainment. Additionally, immigrant

college students were particularly interested in a pioneering career, possibly indicating that the idea of an American dream is still alive and well among newcomers to the country.

CONCLUSIONS

Our study demonstrates that students vary in their COEs. Students' race and ethnicity, followed by gender, are the strongest and most consistent predictors of COEs, while career interests have varying degrees of influence on college students' COEs. Our findings regarding career interest and COEs aligned with certain job stereotypes and previous research associating career outcomes with career interests. Further studies could look at how shifting career stereotypes influence career choice. There could be two mechanisms by which COEs interact with career interests. In the first, students may have a particular set of values (such as those gained through socialization) and may then search out a career that matches those goals. Alternatively, students may primarily be motivated by interest in a field or career, and their values are subsequently shaped by exposure to the communities of practice that already exist in that field.

If it is a goal to attract students with more varied desires for COEs, fields like medicine, health, or STEM could work to break the stereotypical COEs by emphasizing that other COEs can also be achieved by working in these careers. This change may be a real change (if the outcomes associated with the field in fact match the stereotypes), or it may be a change in messaging and branding (if the associated outcomes reflect a distorted view of the field). For example, Hazari and colleagues (2011) hypothesized that promoting more balanced motivations for a career in physics and countering stereotypes—such as this career catering mainly to intrinsic rewards—may help attracting students from underrepresented groups who may need to focus on external rewards like monetary compensation in consideration of their career.

As usual with correlational research, this study can offer no causal explanation. However, our findings do indicate a relationship between career interests and COEs. In light of these results, as well as those of other research on COEs and career interest, it appears likely that there is mutual feedback within this relationship. Longitudinal research would be valuable in helping disentangle this interdependent relationship and determine how a career interest influences COEs, and vice versa. Furthermore, follow-up investigations of student COEs could investigate whether or how these values shift with generational changes over time.

Research on career development has rarely examined the impact of career interest, gender, and race/ethnicity on what students hope and expect to get out of their careers. This study contributes to the field by identifying differences in career outcome expectations by gender and race/ethnicity. In an increasingly diverse workforce where racism and gender discrimination persist, more studies are needed to understand the underlying factors that impact career choice in minority and marginalized groups of individuals.

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Endnote

¹ Demographic percentages were calculated with the raw data (prior to the multiple imputation). Hence, the percentages do not add up to 100%.

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