

Working Paper

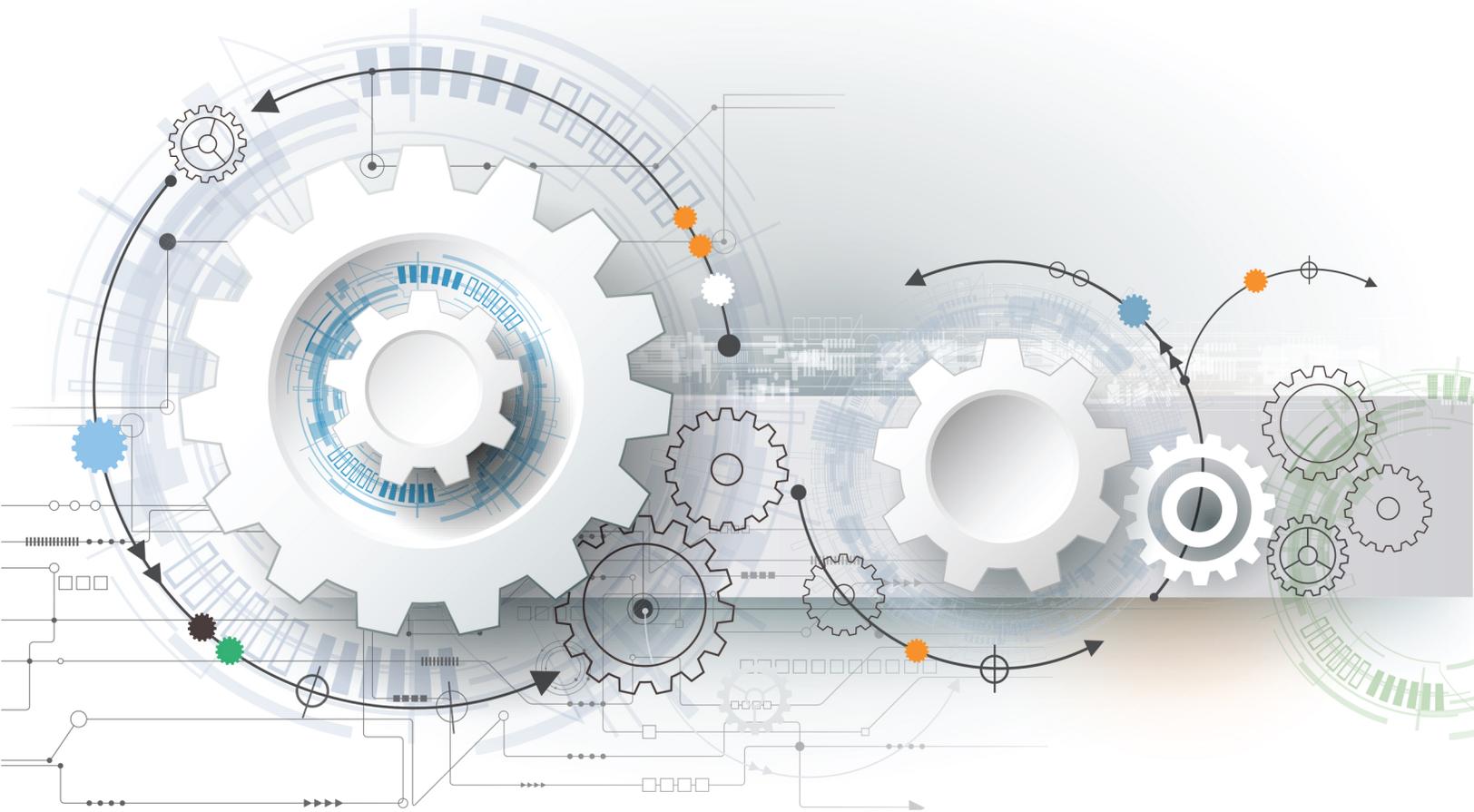
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## Sticking to the Plan:

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# Which Factors are Related to Intended-Declared Major Consistency?

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## ACT WORKING PAPER SERIES

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### Abstract

Roughly 4 out of 5 high school students select an intended college major when they register for the ACT<sup>®</sup>, yet only 55% of these students declare a major that is consistent with their intentions. Based on the theory of planned behavior and person-environment fit, the current study examined factors related to intended-declared major consistency. Using ACT data from the high school graduating class of 2013, which included over 200,000 first-year students attending one of 939 four-year postsecondary institutions, results indicate that interest-major fit, achievement-major fit, and certainty of intended major were significantly related to intended-declared major consistency.

**Key Words:** college major, person-environment fit, theory of planned behavior

### Sticking to the Plan:

#### Which Factors are Related to Intended-Declared Major Consistency?

Roughly four out of five high school students select an intended college major when they register for the ACT, yet only 55% of these students declare a major in the first year of college that is consistent with their intentions (ACT, 2014). As both colleges and students use the students' intended college major to help navigate the search process and to find the best match for enrollment purposes, the degree to which students follow through on their plans has important implications for the well-being of colleges and for the success of their students.

From the perspective of colleges, students' intended major is an important criterion used to help search for and recruit prospective students. For example, for the 2013 high school graduate class, over 1,000 colleges used ACT's Educational Opportunity Service (EOS), with 57% using choice of major/occupation as a student search criterion (ACT, 2014). On the student side, over 1.5 million 2013 ACT-tested high school graduates opted into EOS, with 84% being selected by a college using major/occupation as a criterion.

Students' intended major is also an important piece of information in order to anticipate future demand for specific programs of study. Trends in students' intended majors have implications for the allocation of space (e.g., classrooms, labs, etc.) on a campus and for anticipating changes in teaching loads and staffing. Moreover, at institutions that use responsibility centered budgeting and other similar finance structures, using intended major to project future demand for specific programs of study has implications for the allocation of revenues across the college.

From the student's perspective, understanding the relationship between one's intentions and future behavior may help better align students' expectations about college selection. For

example, some colleges specialize in particular majors or major areas, so knowing one's fit with a particular major both in terms of the alignment of interests and academic preparation could help students to lower their chances of needing to transfer to another college in order to pursue a different major. Additionally, many institutions that offer an abundance and diversity of program offerings require students to apply and be admitted directly to a college or to a particular school within a college based on the student's intended major. Although the denial of admission to a particular program of study likely does not mean denial of admission anywhere at the university, it may require students to travel a more difficult path to be successful in their eventual program of study.

Understanding the relationship between one's intentions and future behavior may also help better align students' expectations about major selection. Simply knowing that nearly half of students do not end up majoring in the area that they had intended to in high school may alleviate some of the stress and anxiety that is often associated with choosing a major (St. John, 2000). Additionally, illuminating the role of other characteristics, such as interests and certainty, on intended-declared major consistency may help students select a college major that is better fit for them, thereby increasing their likelihood of enrolling, persisting, and succeeding in that major.

The purpose of this study is thus to identify student characteristics related to intended-major consistency to better understand why some students are more likely than others to stick with their plans.

### Literature Review

A dearth of research exists examining the relationship between college plans and future behavior; this is particularly true when narrowing the focus to college major intentions and declared major. Data collected by ACT affords the opportunity to examine the relationship

between student's postsecondary plans and their actual postsecondary behaviors. For example, data based on the 2013 high school graduating class found that 57% of students attending a four-year institution and 44% of students attending a two-year institution declared a major that was in the same broad major area as what they had indicated when they registered for the ACT (ACT, 2014). The percentage of students having intended-declared major consistency also varied by the broad areas in which the students intended to major. To demonstrate the range among students attending four-year colleges, 69% of intended business majors actually declared a major in the area of business whereas only 3% of students intending to major in the area of health administration and assisting actually followed through on their plans.

The current study builds on the findings from this report, which were descriptive in nature, by building a multivariate model of intended-declared major consistency. Psychological theories of planned behavior (Ajzen, 1991; Fishbein & Ajzen, 1975) and person-environment fit, notably Holland's Theory of Vocational Choice (Holland, 1973), guided the identification of predictors to be included in the model of intended-declared major consistency.

### *Theory of Planned Behavior*

In the theory of planned behavior, one's intentions to perform a behavior are believed to be the most proximate antecedent of actual behavior (Ajzen & Fishbein, 2005). The theory also postulates that attitude toward the behavior, subjective norms, and perceived behavioral control jointly influence one's intentions to perform the behavior. The current study is focused on the intention-behavior relationship. When intentions and behaviors are assessed at an appropriate level of specificity, strong support for this relationship is found. A meta-analysis of 10 meta-analyses examining the intention-behavior relationship found an overall mean correlation of .53, indicating that intentions account for 28% of the variance in behavior (Sheeran, 2002). Despite a

strong effect, much variability remains with nearly three-quarters of the variance unaccounted for.

Given this variability, research has examined moderators of the intention-behavior link (e.g., Cooke, & Sheeran, 2013). For example, characteristics of the intentions have been shown to moderate the relationship. Among these is the certainty of one's intentions. Specifically, research has shown that the level of certainty or confidence in one's intentions is related to future behavior. As it relates to educational and career outcomes, individuals who were more certain about their occupational plans were more likely to earn a degree in the career field of interest, even after controlling for ACT scores (ACT, 2009). Among individuals with high ACT scores (i.e., 28 or higher), 46% who were very sure about their occupational choice earned a degree in that career field as compared to 28% who were not sure about their occupational choice. Similarly, among a sample of college students, Restubog, Florentiono, and Garica (2010) found that career decidedness was correlated  $-.31$  with academic program turnover, assessed 18 months later. Major certainty will be evaluated based on student responses to the ACT registration item asking how sure they are about their college major choice.

### *Person-Environment Fit*

Person-environment fit also lends itself to understanding the selection and persistence in a specific college major. One of the predominant models of person-environment fit used to explain how individuals choose careers and college majors is Holland's theory of vocational choice (1973; 1997). In this theory, both individuals and work environments can be represented by six personality types: *Realistic*, *Investigative*, *Artistic*, *Social*, *Enterprising*, and *Conventional*, which is represented as a hexagon. Interest types that are adjacent to each other on the hexagon (e.g., *Social* and *Artistic*) are most like each other whereas opposite dimensions (e.g. *Artistic* and

Conventional) are least like each other. Prediger (1982) empirically demonstrated that the six Holland codes could be represented by two work task dimensions: Ideas/Data and People/Things (see Figure 1). Research conducted at ACT has mapped both occupations and college majors onto this two-dimensional space as represented in the World-of-Work-Map and Map of College Majors (ACT, 2009). A description of the six interest dimensions and examples of related careers are provided in Table 1.

[FIGURE 1 AND TABLE 1 HERE]

There are three fundamental assumptions of Holland's Theory: self-selection, socialization, and congruence (Smart, Feldman, & Ethington, 2006). As for the self-selection assumption, the theory proposes that individuals seek out environments that are congruent with their interests. For example, individuals with Artistic interests are more likely to pursue an artistic major and/or career. The socialization assumption suggests that the environment type reinforces and rewards behaviors that are consistent with the predominant members of the environment. Finally, the congruence assumption is that individuals who fit with their environment are more likely to be satisfied and successful. There is a growing body of empirical evidence supporting Holland's Theory to explain the careers and majors individuals choose and their subsequent persistence and performance in those areas.

Focusing specifically on major choice, research findings have shown that students are more likely to select a major that is aligned with their interests, supporting the self-selection assumption (e.g., Le, Robbins, & Westrick, 2014; Porter & Umbach, 2006). Porter and Umbach (2006) examined the validity of Holland types for predicting student's college major choice into one of four categories: arts and humanities, interdisciplinary, social sciences, and life and natural sciences and found strong support for Holland's theory. Le, Robbins, and Westrick (2014)

focused on enrollment and persistence in science, technology, engineering, and mathematics (STEM) majors as compared to non-STEM majors and found that interest-major fit added incrementally to the prediction of both college enrollment as well as persistence in college STEM majors.

Similarly, the congruence assumption has been the focus of numerous studies as it relates to college major and subsequent college success. The findings consistently show that students who fit well with their environment in terms of interest are more likely to be successful in college; this includes earning higher grades, persisting in one's major, and graduating on time (e.g., Allen & Robbins, 2008; Allen & Robbins, 2010; Feldman, Smart, & Ethington, 1999; Nye, Su, Rounds, & Drasgow, 2012; Smart, Feldman, & Ethington, 2006). Specifically, meta-analytic evidence indicates that vocational interests are moderately correlated with academic performance in college; however, these correlations are stronger when interests are congruent with the student's major (Nye et al., 2012). Similar results were found when examining persistence in college. Corroborating these findings, Allen and Robbins (2010) found that interest-major congruence predicts timely degree attainment (graduating in four years from four-year colleges and in two years from two-year colleges) above and beyond prior test scores and college GPA. Similarly, students are more likely to persist in their major, or not change major, when they have higher interest-major congruence (Allen & Robbins, 2008). Note that these studies examined persistence within a major once in college. A study of the consistency between students' intended major and declared major has not been explored thus far, and this is the focus of the current study.

The degree to which one fits with an environment extends beyond interests. Another important consideration is whether students are academically prepared for the content that will

be taught in that major, or what is referred to in the literature as demands-abilities fit (Dawes & Lofquist, 1984). Research has clearly demonstrated that high school graduates who are more academically prepared, as measured by high school grades and test scores, are more successful in college (ACT, 2013a, 2013b; Radunzel & Noble, 2012). For example, research shows that students with higher ACT scores are more likely to return for the second year, earn higher grades, and graduate in a timely manner. This research provides support for a main effect of academic achievement on college outcomes; however, specific knowledge, skills, and abilities may be more or less important for certain majors. For example, research has shown that a much higher level of mathematics and science knowledge and skills is needed to have a good probability of earning a B or higher in first-year mathematics and science courses of STEM majors (Mattern, Radunzel, & Westrick, 2015). Along these lines, research has begun to examine the utility of Holland's (1997) model of interests and occupations as an integrative framework for mapping various individual differences, including cognitive abilities, onto occupational clusters (e.g., Armstrong, Day, McVay, & Rounds; 2008; Prediger, 1999). The current study extends this research by examining students' academic fit with their intended major by comparing their ACT score profile to the mean ACT profile of successful students in the major.

### *Current Study*

The purpose of the current study is to better understand what factors are related to intended-declared major consistency. Specifically, we are interested in understanding whether some students are more or less likely to stick to the plan and declare a major in college that is congruent with what they reported prior to enrollment. Guided by the theories of planned behavior and of person-environment fit, we hypothesized that students' propensity to declare a major in their intended major area would increase with stronger alignment between the students'

interests and the interests of other college students in their intended major, with better alignment between the students' academic preparedness and the preparedness of college students who were successful in that major, and with the certainty that students express in their intended major, controlling for such background characteristics as the students' gender, race/ethnicity, their parents' education level, and their intended major area.

## Methods

### *Sample*

Data used to examine the predictors of intended-declared major consistency come from the ACT score report for the high school graduating class of 2013 (N = 1,799,243). In addition to test scores, ACT score report data contain a student profile section, which includes information such as their background characteristics, degree aspirations and educational plans, and an interest inventory which measures the six vocational interests that correspond with Holland's six personality types. Data for the 2013 ACT-tested high school graduates were matched to college enrollment records (N = 1,244,641) provided by the National Student Clearinghouse (NSC), allowing us to link the students' intended major area from the ACT registration form to their declared major as reported by the college. Analyses were limited to students who initially enrolled at a four-year postsecondary institution (N = 930,907), given the abundance and diversity of program offerings at these institutions. Students who did not provide an intended major on the ACT registration form or who had a missing or undeclared major as reported by the NSC were removed from the study. This resulted in a final sample size of 229,210 first-year college students attending one of 939 four-year postsecondary institutions. Descriptive statistics for the study sample are provided in Table 2.

[TABLE 2 HERE]

## *Measures*

*Intended-Declared Major Consistency.* Our measure of intended major is an item on the ACT registration form that reads, “Which college major (program of study) do you plan to enter?” Students were able to select an intended college major from a list of 294 possible options. Roughly 79% of ACT-tested students from the high school graduating class of 2013 selected an intended major, another 15% indicated that they were undecided, and 6% did not respond to the item (ACT, 2013c). Student’s declared major was the six-digit Classification of Instructional Programs (CIP) code reported to the NSC by the students’ college. Based on a crosswalk between ACT major codes and CIP codes, both intended major and declared major were recoded into one of 17 major areas that are found on the ACT registration form (i.e., Agriculture and Natural Resources Conservation; Architecture; Arts: Visual and Performing; Business; Communication, Family, and Personal Services; Communications; Computer Science and Mathematics; Education; Engineering Technology and Drafting; Engineering; English and Foreign Language; Health Administration and Assisting; Health Science and Technology; Philosophy, Religion, and Theology; Repair, Production, and Construction; Sciences: Biological and Physical; and Social Sciences and Law). Students were considered to have intended-declared major consistency if their intended major and their declared major were in the same broad major area. This outcome was coded 1 if the two majors were consistent and 0 otherwise ( $M = .56$ ).

*Interest-Major Fit.* Students who register for the ACT have the opportunity to complete the ACT Interest Inventory (for more details, see ACT, 2009). The inventory consists of 72 activity statements (e.g., explore a science museum). For each statement, respondents select one of three options: I would dislike doing this activity, I am indifferent (don’t care one way or the other), or I would like doing this activity. Based on their responses, a score on each of the six

interest dimensions is produced, with the score scale having a range of 20 to 80. Based on these scale scores, a student's interest score profile can be determined. As developed by Allen and Robbins (2010), interest-major fit scores were computed as the correlation between a student's interest score profile and the mean interest score profile of successful students in that major. Successful students comprised juniors (at four-year colleges) and sophomores (at two-year colleges) in that major who had earned a cumulative GPA of 2.0 or higher. Interest-major fit score values can range from -1.0 to 1.0 ( $M = 0.40$ ,  $SD = 0.42$ ).

*Achievement-Major Fit.* To calculate entering students' achievement-major fit score, we first assigned college majors to a domain based on the more dominant ACT test scores of successful college students in that major. Successful students comprised juniors (at four-year colleges) and sophomores (at two-year colleges) in that major who had earned a cumulative GPA of 3.0 or higher.<sup>1</sup> To assign a domain to the major, we first computed for each successful student in the major the average of their ACT English and reading subject scores to represent the English Language Arts (ELA) domain and the average of their ACT mathematics and science subject scores to represent the Science, Technology, Engineering and Mathematics (STEM) domain. We then calculated the group (i.e., major) mean and grand mean and respective standard deviations for the ELA and STEM domain scores. For each major, we calculated a Z-score for each domain by subtracting the grand mean from the group mean and dividing the difference by the standard deviation of the grand mean. We then assigned a dominant domain to the major based on the magnitude of the difference in the Z-scores for the two domains. We assigned the ELA domain to the major if the Z-score difference was greater than 1, and we assigned the STEM domain to the

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<sup>1</sup> We use a more stringent minimum cumulative GPA to define successful students with regard to achievement fit than we use when determining interest fit.

major if the Z-score difference was less than -1. If the difference was between -1 and 1, we assigned a “General” domain to the major.

After assigning a domain to each major, we obtained a fit score for each student who intended to major in that field by first computing the appropriate domain score for the student (ACT Composite was used for the “General” domain) and then calculating the standardized difference between the student’s domain score and the mean domain score of successful students in that major. This standardized score, here called the achievement-major fit score, has values that range from -5.49 to 4.94 ( $M = 0.22$ ,  $SD = 1.18$ ).

*Major Certainty.* Our measure of major certainty is an item on the ACT registration form that reads, “How sure are you about your current choice of college major?” The response options are “I am very sure,” “I am fairly sure,” and “I am not sure.” In the current sample, 41% indicated that they were very sure, 46% were fairly sure, and 13% were not sure of their choice of intended major.

*Background Characteristics.* Student’s gender, race/ethnicity, and parents’ highest educational level were obtained from students’ responses to the ACT registration form. The gender breakdown was 57% female and 43% male. For race/ethnicity, the response options were recoded into the derived federal reporting categories: Black or African American (12%), American Indian or Alaska Native (0.5%), Asian (5%), Hispanic (12%), Native Hawaiian or Other Pacific Islander (0.2%), two or more races (4%), and White (66%). As for parents’ highest education level, students’ response options were recoded into the following categories: no college (15%), some college (27%), bachelor’s degree (32%), and graduate degree (26%). Dummy variables for intended major area were also included in the model given the large variability in intended-declared major consistency by program of study (ACT, 2014).

### *Analyses*

The outcome examined in the current study – intended-declared major consistency – is dichotomous, where:

$$y_i = \begin{cases} 1 & \text{declares major in intended major area} \\ 0 & \text{does not declare within intended area} \end{cases}$$

To examine the relationship between our predictors and this dichotomous outcome, we estimated a binary logit regression model which takes the form:

$$\ln\left(\frac{p_i}{1-p_i}\right) = x_i\beta$$

where  $p_i$  is the probability of student  $i$  declaring a major that is consistent with his or her intended major area;  $x_i$  is a vector of predictors for student  $i$ , including his or her interest-major fit, achievement-major fit, certainty of intended major choice and a set of statistical control variables; and  $\beta$  is a vector of parameter estimates associated with those predictors. Results of this model will be interpreted as *ceteris paribus* (i.e., all else being equal) changes in the odds of declaring a major in one's intended major area given a one-unit change in the independent variable (Long, 1997; Long & Freese, 2003).

The binary logit model was estimated using the *logit* command in Stata 13. Given our focus on the majors that students declared during their first year of college, students in the sample were clustered within 939 four-year colleges. Since colleges provide students with a shared environment and set of experiences, have differences with regard to the amount and quality of resources allocated for students, and often have specific policies with regard to the timing and criteria by which students can declare a major, we elected to adjust the standard errors in our model to allow for intragroup correlation using the 'cluster' option of the *logit* command.

## Results

The logistic regression model that we estimated for this study converged in four iterations. The Wald Chi-Square test of the likelihood ratio of 8,775.73 with 31 degrees of freedom was statistically significant ( $p < 0.001$ ), suggesting that our model as a whole fits the data better than an intercept-only model. The remainder of the results section will focus on the directionality and magnitude of the particular parameters included in our model on the students' probability of declaring a major that was consistent with their intended major area. Detailed results of the model can be found in Table 3.

[TABLE 3 HERE]

After accounting statistically for achievement-major fit, intended major certainty, demographic characteristics, and intended major area, we found that interest-major fit had a positive and statistically significant relationship with the chances of declaring a major that was consistent with one's intended major area. Figure 2 shows the students' predicted probability of declaring a major that is consistent with their intended major area across the valid range of interest-major fit scores within our sample, holding all other variables constant at their mean levels. For example, we see that students with an interest-major fit score of -0.5 had a 0.49 probability of having consistency between their declared major and intended major area as compared to a 0.59 probability for students with an interest-major fit score of 0.5.

[FIGURE 2 HERE]

As for achievement-major fit, students who are either under-prepared or over-prepared academically relative to successful college students in their intended major may choose to declare a major in a different area than they had originally intended. To test for this possibility, we included within our model both a measure of achievement-major fit and the quadratic term

for this parameter. Both parameter estimates were statistically significant. The positive coefficient for achievement-major fit suggests that there is a positive relationship between this predictor and intended-declared major consistency. The negative coefficient for the quadratic term, however, suggests that the strength of this positive relationship decreases as achievement-major fit increases. In fact, as Figure 3 illustrates, the relationship between this variable and the probability of intended-declared major consistency becomes negative at a particular point along the continuum of achievement-major fit scores, all else being held constant. Worth noting is that the probability for declaring a major that is consistent with one's intended major area peaks when students' academic preparation in that domain is slightly higher (by about 0.7 standard deviations) than the corresponding academic preparation of successful students in that major. Beyond this peak, the change in the direction of the relationship means that those students toward both extremes of the achievement-major fit scale (i.e., the lowest *and* highest achieving students relative to successful college students in their intended major) were less likely than students with better achievement-major fit to declare a major that is consistent with their intended major area.

[FIGURE 3 HERE]

Even after accounting for interest- and achievement-major fit, we found that students' propensity to declare a major that is consistent with their intended major area differed by their stated level of certainty regarding their intended major choice. Compared to those students who were not sure of their choice of intended major, students who were fairly sure had 66% higher odds of declaring a major that was consistent with their intended major area. Moreover, the odds of having intended-declared major consistency among those students who were very sure of their intended major choice were 183% higher than the odds for students who were not sure of their

intended major choice. When we calculated the predicted probabilities for each of these groups while holding all other variables constant at their mean values, we found that students who were not sure of their intended major choice had a predicted intended-declared consistency rate of only 0.42, compared to a rates of 0.54 and 0.67 for students who were fairly sure and very sure, respectively (See Figure 4).

[FIGURE 4 HERE]

Although the coefficients for interest-major fit, achievement-major fit, and intended major certainty were all statistically significant and in the expected direction, a number of statistically and practically significant differences in students' intended-declared major consistency were also present in our estimated model. Notable among these was the difference in the students' propensity to declare a major in their intended major area by their gender, race/ethnicity, and parent education level. Specifically, females had 18% higher odds than males, and Asian students had 16% higher odds than White students of having intended-declared major consistency. Compared to students whose parents had no college education, students whose parents had earned a bachelor's degree or a graduate degree had 9% and 13% higher odds, respectively, of declaring a major in their intended major area.

With the exception of students who intended to major in the area of Business, students who intended to major in the area of Engineering had significantly higher chances of declaring a major in their intended major area than students within all other intended major areas. Of particular note among these differences were the extremely lower odds of having intended-declared major consistency among students in Engineering Technologies & Drafting (i.e., 95% lower) and in Health Administration & Assisting (i.e., 98% lower).

## Discussion

Findings from the current study shed light on which students are more likely to follow through on their plans and declare a college major that is consistent with their intentions. The results provide support for both the theory of planned behavior and person-environment fit. In general, slightly more than half of the students stuck with their initial plan (56%); however, this varied in meaningful ways by important student characteristics. In particular, students who planned to major in an area that was aligned with their interests and their academic strengths were more likely to have intended-declared major consistency. This was also true of students who were more certain of their college major intentions. Even after accounting for interest-major fit, achievement-major fit, and intended major certainty, we still found differences by demographic characteristics with females (as compared to males), Asian students (as compared to White students), and students whose parents achieved a higher level of education being more likely to have intended-declared major consistency. Understanding why these differences persist for various subgroups of students is a seemingly fruitful avenue for future research.

Notable differences were also observed by intended major area. In particular, intended-declare major consistency rates for students who planned to major in Engineering Technologies & Drafting; Health Administration & Assisting; and Repair, Production, & Construction were among the lowest. These areas tend to be more prevalent among the offerings at two-year colleges, which may explain the low consistency rates for our sample of four-year college students. Architecture was another area with a notably lower intended-declared major consistency rate. Although traditionally offered at four-year colleges, Architecture is not as widely available of a program area, which may partly explain the current findings. Future

research should directly test the role of institutional factors such as program offerings, admission criteria, and institutional size and selectivity on intended-declared major consistency.

The model proposed in the current study provides a useful starting point for understanding intended-declared major consistency; however, future research should investigate whether additional factors could be added to the model to improve prediction accuracy and explain more variance in intended-declared major consistency. This is important because even some students who had high interest- and achievement-major fit and were very certain about their major choice ended up declaring a major in a different area. One area of research that seems worthwhile would be the role of temporal stability of intention on intended-declared major consistency (Sheeran, Orbell, & Trafimow, 1999). This could be investigated in various ways. For example, for students who take the ACT on multiple occasions, whether the same major area on both occasions was selected could be considered an indicator of temporal stability. Alternatively, the time duration between when a student took the ACT and subsequently enrolled in college could also serve as an indicator of temporal stability with the assumption being that as more time has elapsed, intentions are less stable. Other factors that have been consistently linked to positive educational outcomes and seem relevant to the current research question included academic behaviors, motivation, academic goals, and previous coursework in the content area of the major (e.g., Allen & Robbins, 2010; Poropat, 2009; Richardson, Abraham, & Bond, 2012; Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004; Schwartz, Sadler, Sonnert, & Tai, 2009).

The findings from the current study have important implications for college enrollment management. Students' intended major is an important criterion used to help search for and recruit prospective students; however, the current study underscores the fact that this information

may be more (or less) reliable for different students. With this in mind, recruitment efforts may want to implement more sophisticated methods of identifying prospective students by triangulating numerous pieces of information about the student. For example, two students who both plan to major in engineering – one who is not sure about the major choice and has low interest- and achievement-major fit and the other one who is very certain and has high interest- and achievement-major fit – may require different recruitment strategies. Additionally, being able to more precisely anticipate future demand for specific programs of study could help colleges and universities better plan for the allocation of space (e.g., classrooms, labs, etc.) on a campus and for anticipating changes in teaching loads and staffing.

The results also have important implications for students. To help alleviate some of the stress and anxiety that is often associated with choosing a major, those advising students on major selection – whether it be a parent, teacher, or guidance counselor – may want to discuss these findings, namely that nearly half of students do not end up majoring in the area that they had intended to in high school. Additionally, illuminating the role of other characteristics, such as interests and certainty, on intended-major consistency may help students select a college major that is a better fit for them, thereby increasing their likelihood of enrolling, persisting, and succeeding in that major.

Unfortunately, research indicates that many students do not have the knowledge, skills, and preparation needed to set personally relevant, informed goals and to formulate strategies to achieve those goals (Bobek & Zhao, 2015). One question on the ACT registration form asks students whether they need help with education or occupation plans, and many students answer in the affirmative. ACT Profile, a career planning website, was developed to address this need. The website allows students to explore majors and occupations as they align to not only their

knowledge and skills but also as they relate to their interests and values. As shown in Figure 5, the Career Map shows students how their own personal attributes relate to the attributes of jobs/careers. In this particular example, the results indicate that for this individual, careers in the social sciences, medical technologies, engineering and technologies, medical diagnosis and treatment, and creative and performing arts are the best match, followed by natural sciences and technologies and applied arts. By placing the career areas on a map, users can see career areas that are physically close to each other, indicating that individuals with similar interests, values, and abilities fit with these types of occupations. This provides an opportunity for individuals to explore different options not originally in their consideration set. Within ACT Profile, individuals can also learn more about specific career pathways such as typical salary and education requirements.

[FIGURE 5 HERE]

In sum, the current study highlights the complex nature between intentions and actual behavior as it pertains to intended-declared major consistency. Understanding which students are more likely to stick with their plan is useful information for both high school students who are embarking on the journey of selecting a college and college major and for colleges and universities as they plan for these prospective students.

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**Table 1.** ACT Interest Inventory Dimensions' (Holland Code) Descriptions and Example Careers

Dimension	Description	Example Careers
Technical (Realistic)	Working with tools, instruments, and mechanical or electrical equipment. Activities include building, repairing machinery, and raising crops/animals.	Aircraft pilot, Forester, Computer Programmer, Electrician, Chef, Water Plant Operator, Locksmith
Science and Technology (Investigative)	Investigating and attempting to understand phenomena in the natural sciences through reading, research, and discussion.	Architect, Geologist, Pharmacist, Dentist, Veterinarian, Experimental Psychologist
Arts (Artistic)	Expressing oneself through activities such as painting, designing, singing, dancing, and writing; artistic appreciation of such activities (e.g., listening to music, reading literature).	Graphic Artist, Actor, Reporter
Social Service (Social)	Helping, enlightening, or serving others through activities such as teaching, counseling, working in service-oriented organizations, and engaging in social/political studies.	Athletic Trainer, Teacher, Lawyer, Flight Attendant
Administration and Sales (Enterprising)	Persuading, influencing, or motivating others through activities such as sales, supervisions, and aspects of business management.	Human Resources Manager, Real Estate Agent, General Manager, Police Officer
Business Operations (Conventional)	Developing and/or maintaining accurate and orderly files, records, accounts, etc.; following systematic procedures for performing business activities.	Hotel Clerk, Bank Teller, Air Traffic Controller

**Table 2.** Descriptive Statistics for Study Variables

Variable*	Mean	Standard Deviation
Intended-Declared Major Consistency	0.563	0.496
Interest-Major Fit	0.401	0.419
Achievement-Major Fit	-0.224	1.184
<i>Certainty of Intended Major Choice</i>		
Very Sure of Major Choice	0.410	
Fairly Sure of Major Choice	0.460	
Not Sure of Major Choice	0.130	
<i>Gender</i>		
Female	0.571	
Male	0.429	
<i>Race/Ethnicity</i>		
Black or African American	0.121	
American Indian or Alaska Native	0.005	
Asian	0.050	
Hispanic	0.125	
Native Hawaiian or Other Pacific Islander	0.002	
Two or more races	0.039	
White	0.656	
<i>Parent Education</i>		
Parent Has No College	0.145	
Parent Has Some College	0.274	
Parent Has Bachelor's Degree	0.318	
Parent Has Graduate Degree	0.264	
<i>Intended Major Area</i>		
Agriculture & Natural Resource Conservation	0.017	
Architecture	0.014	
Arts: Visual & Performing	0.072	
Business	0.115	
Community, Family, & Personal Services	0.020	
Communications	0.030	
Comp. Science & Mathematics	0.030	
Education	0.063	
Engineering	0.115	
Engineering Technologies & Drafting	0.014	
English & Foreign Languages	0.015	
Health Administration & Assisting	0.029	
Health Sciences & Technologies	0.257	
Philosophy, Religion, & Theology	0.005	
Repair, Production, & Construction	0.004	
Sciences: Biological & Physical	0.098	
Social Sciences & Law	0.101	

N = 229,210

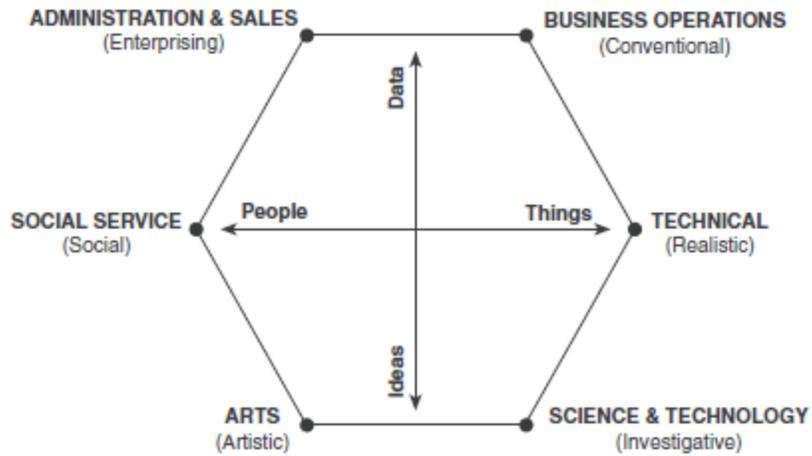
\* Reference groups are “Not Sure of College Major,” “Male,” “White,” “Parent Has No College Education,” and “Engineering.”

**Table 3.** Results of Logistic Regression Model

Variable	Coeff.	S.E.	Odds Ratio
Interest-Major Fit	0.457*	0.013	1.579
Achievement-Major Fit	0.094*	0.008	1.099
Achievement-Major Fit squared	-0.070*	0.004	0.932
<i>Certainty of Intended Major Choice</i>			
Very Sure of Major Choice	1.040*	0.017	2.829
Fairly Sure of Major Choice	0.508*	0.016	1.662
<i>Gender</i>			
Female	0.161*	0.013	1.175
<i>Race/Ethnicity</i>			
Black or African American	0.020	0.023	1.020
American Indian or Alaska Native	-0.278	0.097	0.757
Asian	0.147*	0.028	1.158
Hispanic	0.034	0.019	1.034
Native Hawaiian or Other Pacific Islander	0.075	0.091	1.078
Two or more races	-0.042	0.029	0.959
<i>Parent Education</i>			
Parent Has Some College	0.023	0.016	1.023
Parent Has Bachelor's Degree	0.087*	0.018	1.091
Parent Has Graduate Degree	0.122*	0.018	1.130
<i>Intended Major Area</i>			
Agriculture & Natural Resource			
Conservation	-0.599*	0.102	0.549
Architecture	-1.676*	0.110	0.187
Arts: Visual & Performing	-0.767*	0.104	0.464
Business	0.077	0.090	1.080
Community, Family, & Personal Services	-1.170*	0.110	0.310
Communications	-0.728*	0.098	0.483
Comp. Science & Mathematics	-0.692*	0.107	0.500
Education	-0.788*	0.094	0.455
Engineering Technologies & Drafting	-2.947*	0.189	0.052
English & Foreign Languages	-1.079*	0.092	0.340
Health Administration & Assisting	-4.210*	0.262	0.015
Health Sciences & Technologies	-0.367*	0.092	0.693
Philosophy, Religion, & Theology	-1.313*	0.143	0.269
Repair, Production, & Construction	-1.549*	0.229	0.213
Sciences: Biological & Physical	-0.731*	0.095	0.482
Social Sciences & Law	-0.860*	0.082	0.423
Intercept	-0.024*	0.081	

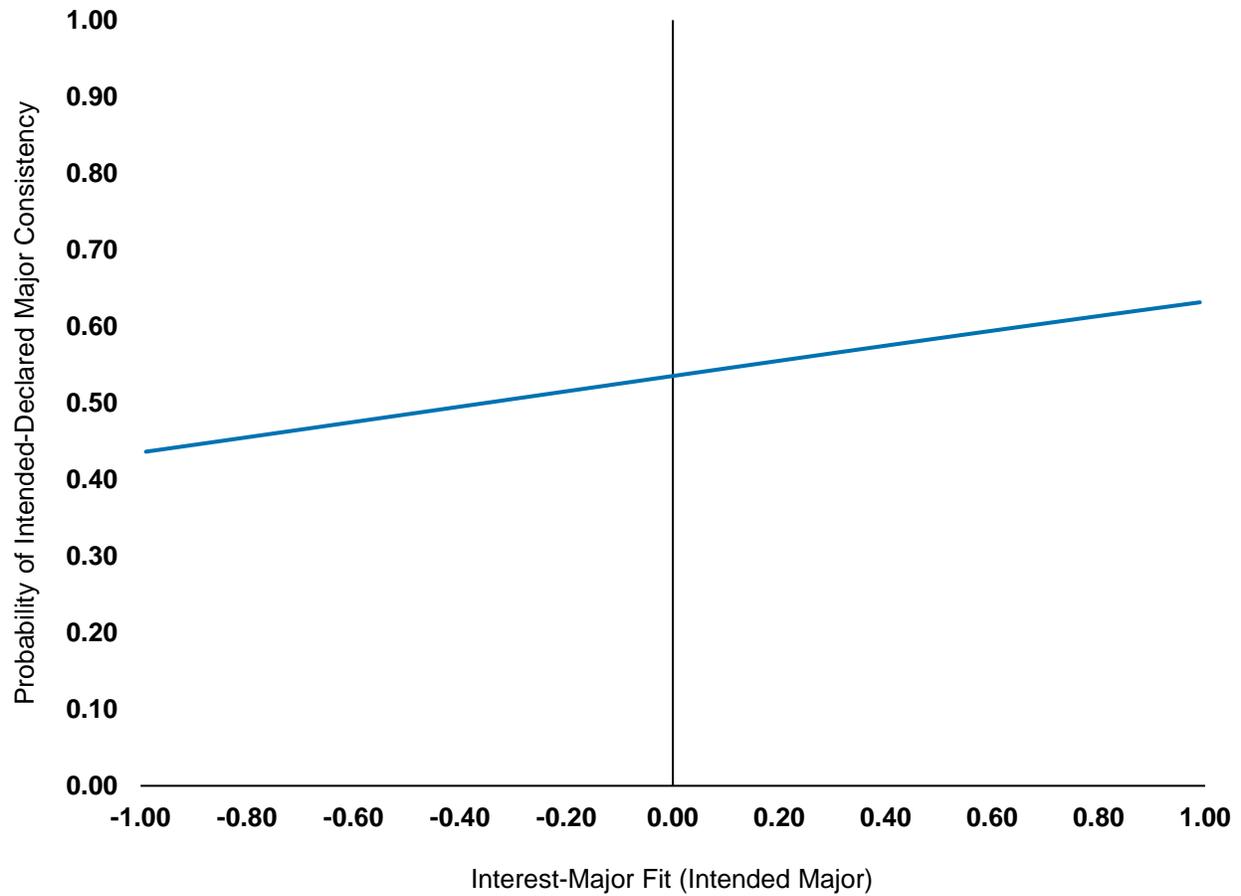
Log pseudolikelihood = -142,274.10; Wald Chi-Square (31 d.f.) = 8,775.73 (p < 0.001)

\* p < 0.001

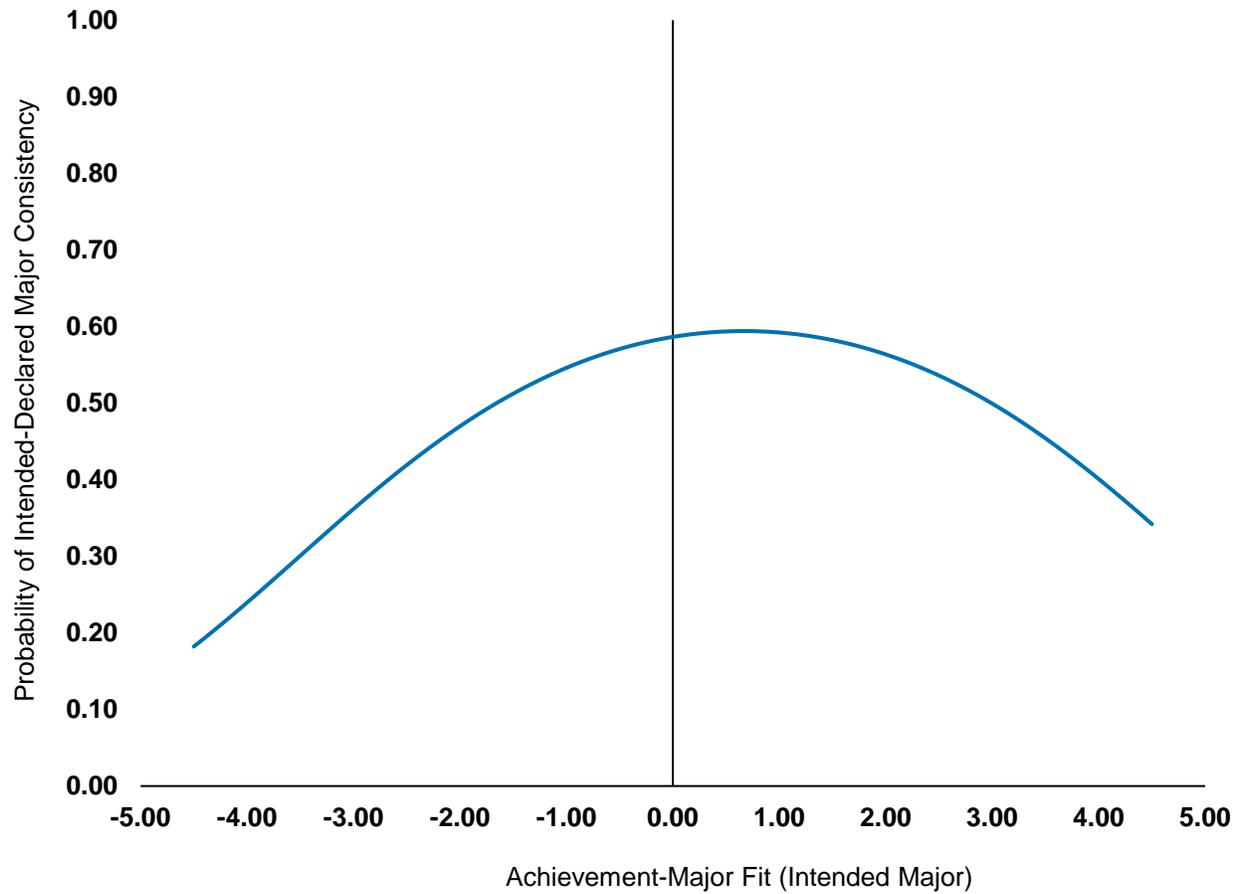


*Note.* Holland types corresponding to UNIACT scales are shown in parentheses.

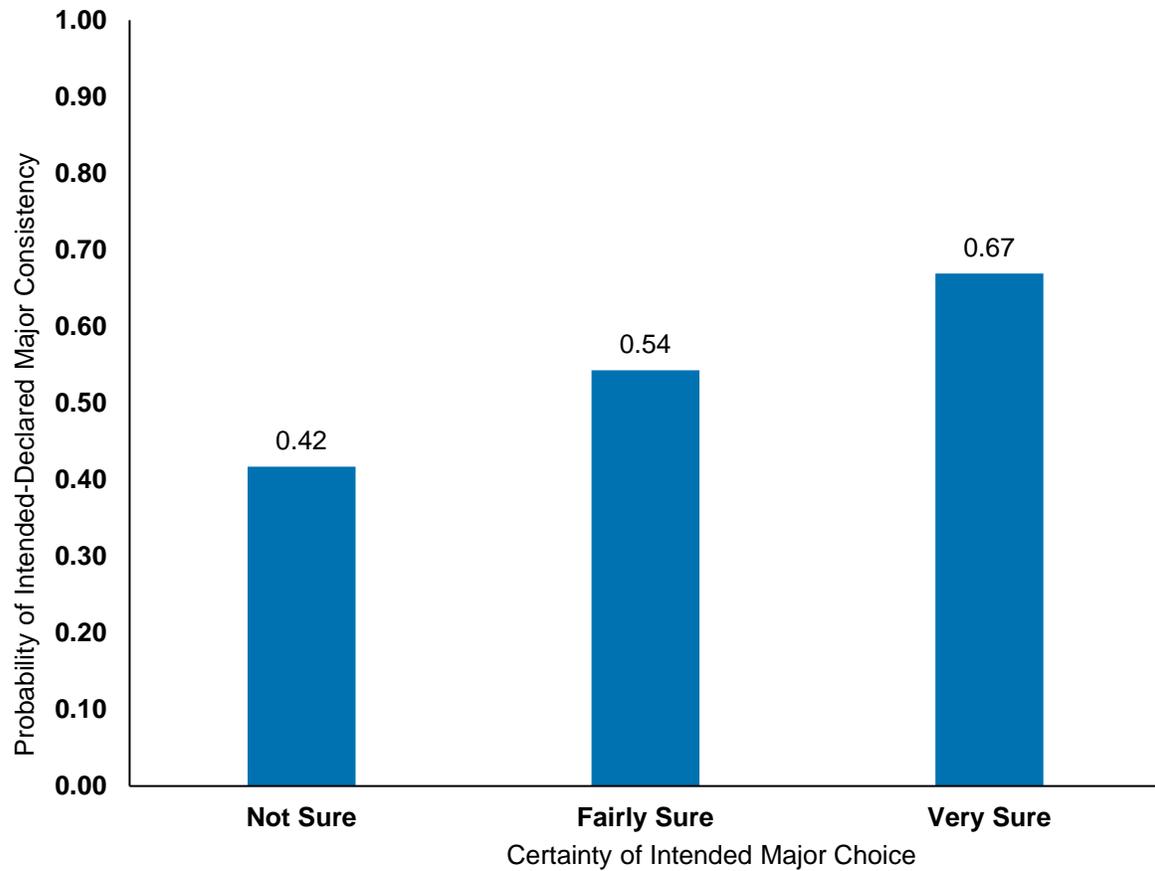
**Figure 1.** The relationship between ACT Interest Inventory Dimensions and the Idea/Data and People/Things Work Task Dimensions



**Figure 2.** Predicted probability of having Intended-Declared Major Consistency by Level of Interest-Major Fit

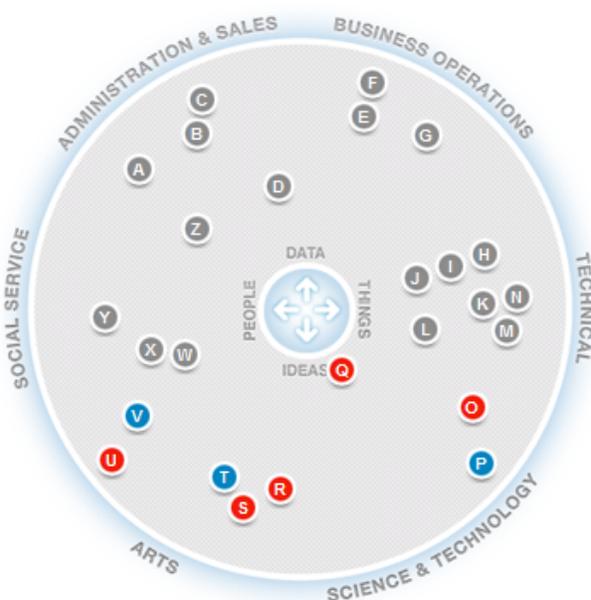


**Figure 3.** Predicted probability of having Intended-Declared Major Consistency by Level of Achievement-Major Fit



**Figure 4.** Predicted probability of having Intended-Declared Major Consistency by Level of Intended Major Certainty

## Career Map



Use the Career Map to explore occupations that may be right for you.

[TAKE A TOUR OF CAREER MAP](#)

[Take your inventories](#) to see the results on the Career Map.

### Roll over and explore!

There are 26 Career Areas to discover and research

### Career Map Key

- Career Area
- Matches at least one Inventory
- Matches two or more Inventories

## My Profile



Profile is 50% completed

### Interests

- Your responses to the Interest Inventory suggest that you may prefer working with Ideas and, perhaps, People
- Remember that interests and abilities differ. You may need to develop abilities to pursue your interests

### Abilities

- Your responses to the Abilities Inventory suggest that you may prefer working with Ideas and, perhaps, Things
- Your abilities may change with more education and experience

### Values

Your responses to the Values Inventory suggest that the characteristics of occupations that are most important to you are found in these four Career Areas:

- Medical Diagnosis & Treatment
- Engineering & Technologies
- Creative & Performing Arts
- Social Science

Your values may change with experience.

When you complete more than one inventory the results may point to different areas of the map. It's up to you to decide how much attention each result deserves.

**Figure 5.** ACT Profile Integrative Feedback