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An Examination of High-Achieving College Students: Career Indecision and Career Thoughts

Justina Anne Farley
University of Tennessee - Knoxville, jfarley7@utk.edu

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Jacob J. Levy, Major Professor

We have read this dissertation and recommend its acceptance:

John W. Lounsbury, Melinda M. Gibbons, Melissa A. Bartsch

Accepted for the Council:
Dixie L. Thompson

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

An Examination of High-Achieving College Students: Career Indecision and Career Thoughts

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Abstract

This study examined the relationships among high academic achievement as measured by ACT scores and participation in honors and/or gifted programming, high levels of self-reported interests and skills, and dysfunctional career thoughts. Participants were 143 first and second-year undergraduate students from two southeastern US universities. Assessments included a demographic survey, the Self-Directed Search (SDS), and the Career Thoughts Inventory (CTI). Results suggested a positive relationship between high academic achievement and a greater number of career options to consider pursuing. Specifically, those enrolled in gifted and/or honors programs reported significantly more interests and competencies in a number of domains based on Holland's RIASEC model. However, there was no relationship between high academic achievement or high interest and skills and dysfunctional career thoughts. In fact, non-honors students displayed significantly more decision-making confusion in comparison to those enrolled in honors programming. The findings have implications for both researchers and practitioners.

Keywords: high-achieving, gifted, honors, career thoughts, interests, skills

TABLE OF CONTENTS

CHAPTER I: Introduction..... 1

High Achieving Students: Defining the Target Population.....1

Career Constructs..... 4

CHAPTER II: Method..... 10

Participants..... 10

Procedures..... 12

Measures.....13

CHAPTER III: Results..... 16

Research Question 1.....16

Research Question 2.....18

Research Question 3.....18

Research Question 4.....19

CHAPTER IV: Discussion..... 21

Limitations.....24

Implications for Future Research and Practice.....26

CHAPTER V: Conclusion..... 29

REFERENCES..... 30

Vita.....38

LIST OF TABLES

Table 1: Demographic Characteristics of Participants.....11

Table 2: Correlation Matrix for Study Variables.....17

Table 3: Independent Samples T-Test Results for Honors and Non-Honors Students.....20

Table 4: Independent Samples T-Test Results for Gifted and Non-Gifted Students.....20

CHAPTER I
INTRODUCTION

Selecting an academic major and planning for initial career choices are some of the most challenging decisions for college students. In turn, postsecondary administrators and counselors face the complex task of meeting the career development needs of all students and facilitating effective career planning. Characterized primarily by their academic capabilities (Winston, Miller, Ender, Grites, & Associates, 1984), high-achieving students may encounter an expectation that they will flourish in college and effortlessly enter the world of work (Greene, 2006). In reality, some experts argue that higher education institutions often neglect the academic and vocational needs of this population (Kim & Navan, 2006).

High Achieving Students: Defining the Target Population

Prior to exploring the career development process of high achieving college students, it is essential to define the varying terminology used to describe this population. Common terms to describe academically advanced individuals include high achieving, gifted, talented, and honors. These labels are interchangeable in the literature, however, and specific definitions vary as much as the individuals assigned to these categories (Dougherty, 2007; Rinn & Plucker, 2004; Robinson, 1997). Federal and state governments and organizations continuously attempt to create a unified definition of giftedness as a way of categorizing talented individuals (Greene, 2006).

Although recent national standards recommend that giftedness be defined holistically on the basis on multiple assessments and qualitative data (National Association of Gifted Children, 2010), 18 states continue to employ a strict cutoff score (Mcclain & Pfeiffer, 2012) and IQ scores remain the most common method of identifying gifted individuals for research (Carman, 2013). The most recent and inclusive definition compares the gifted to others of the same age and

experience and identifies them as those who perform or show the potential to perform exceptionally well in intellectual, creative, and artistic domains, and possess extraordinary leadership abilities (Mcclain & Pfeiffer, 2012; U.S. Department of Education, 1993). Although a unified definition that encompasses the multidimensional nature of giftedness is a positive step, such a broad scope still leaves room for interpretation (Carman, 2013).

Defining giftedness is essential for appropriate assessment and program development and as the definition continues to evolve so has an increased scholarly interest in examining giftedness as an identity (Levy & Plucker, 2003; Robinson, Zigler, & Gallagher, 2000). Traditionally, identity groups include those classified on the basis of physical likeness such as race (Ramsey, 2000) but recently, the conceptualization of identity has broadened to include cultural and social constructs such as disability and sexual orientation (Sue & Sue, 2003). These social identity groups, however, are not the only ones with unique experiences and researchers have argued that the gifted population also warrants recognition. For example, Robinson and colleagues (2000) noted, "[t]hese individuals are out of sync with more average people, simply by their difference from what is expected for their age and circumstance…" (p. 1413). Levy and Plucker (2003) contend that gifted children constitute a subculture and require a specialized understanding; therefore, administrators must reexamine the high achieving student to ensure appropriate services for all identity groups.

Defining giftedness is especially important when it becomes the basis for the selection of students for gifted programming (Davis & Rimm, 2004). Regardless of the measures used to identify an individual as gifted, the act of participating in gifted programming distinguishes them from their peers (Hertzog, 2003; Subotnick & Arnold, 1994). In a longitudinal study, Subotnick and Arnold (1994) found that a highlight for participants in an enrichment program for gifted

children was the enjoyment of interacting with their high-ability peers. Additionally, gifted students in Hertzog's (2003) qualitative study attributed their college preparation and confidence in their career choices to being a part of a gifted program. Therefore, gifted programming may provide participants with a sense of connection within a culture of others like them in addition to offering unique academic and career-related guidance.

While classification of giftedness is a challenge for any age group, identification at the collegiate level is even more complicated due to a lack of standardized measures (Rinn & Plucker, 2004). Postsecondary honors programs are one way in which administrators distinguish students with high academic potential and capabilities. While the desired characteristics of an honors program are commonplace, no specific definition for an honors student exists (Cummings, 1994). Selection criteria for honors programs vary among institutions, yet participation largely depends on grade-point average (GPA) and test scores on the American College Test (ACT) and/or the Scholastic Aptitude Test (SAT) (Achterberg, 2005). The rationale for honors programming is that these students are similar to one another yet different from their non-honors peers (Achterberg, 2005). Academically, honors students tend to be intellectually capable of college work, can move more quickly through academic curriculum in comparison to their peers, and often start college with an advanced standing (Achterberg, 2005). Outside of the classroom, Long and Lange (2002) found that honors students have more extracurricular experiences, pursue academic discussions with professors out of class, attend guest lectures, and possess a higher openness to experience.

Despite these differences, honors students and honors programs are not well researched (Achterberg, 2004; Long & Lange, 2002). Perhaps the enhanced educational and vocational preparation experienced by honors students stem from features built in to the program (Hébert &

McBee, 2007), individual personality differences (Long & Lange, 2002), or simply from membership effects (Geiger, 2002; Pascarella & Terenzini, 1991). In fact, Geiger (2002) found that the recognition students get from being a member of a high achieving group and creating a peer network comprise the foundation of an honors program and Long and Lange (2002) cited recognition as a primary motivator for students. Thus, similar to gifted individuals, participation in any honors program may yield a unique sense of identity (Speirs Neumeister, 2002).

Regardless of the term and definition used, high achieving students possess distinct characteristics and share a potential for academic and career success; thus, it is important to examine the potential differences that may exist in comparison to their non-high achieving peers. Although more empirical knowledge is needed to create a unified definition of high achieving individuals so researchers have access to a more homogenous group of participants (Carman, 2013), it is also essential that research continues to examine the uniqueness of this particular population. Evidence continues to assert that ACT scores can strongly predict college success and at this time, it represents the most widely used universal measure of aptitude (ACT, 1998; Robbins, Allen, Casillas, Peterson, & Le, 2006). Therefore, for the purpose of the present research, high achieving college students are all academically advanced students based on their self-reported ACT scores. Further, given the heterogeneity within a high achieving population (Achterberg, 2005; Mcclain & Pfeiffer, 2012) it was important to delineate two sub-groups: honors students refer to those enrolled in a university honors program and gifted/talented signifies that a student has reported a history of enrollment in K-12 gifted programming.

Career Constructs

Students who excel academically and display high levels of intelligence clearly possess high abilities, perhaps in a variety of domains. In fact, these students likely have a distinct career

development process because their abilities allow them to select from many vocational options (Vock, Köller, & Nagy, 2013). Beyond abilities, the identification of academic and vocational interests is a cornerstone of career counseling (Bullock-Yowell, Andrews, McConnell, & Campbell, 2012), vital in successful educational and career decision-making (Gordon, 2010; Gottfredson, 2003), and shows incremental validity in the prediction of occupational choices (Lubinski & Benbow, 2006). Most commonly, vocational decisions result from a process of narrowing down options based on the perceived fit between the work environment and personal characteristics including interests, abilities, values, and personality (Jung, 2012).

Holland's RIASEC theory (Holland, 1985, 1997), one of the most popular and useful career theories (Brown & Brooks, 1996), organizes personal preferences and work environments into six domains: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Typically, most individuals and occupations are assigned a three letter code, associated with their highest three preferences (i.e. SAE). Holland (1997) asserted that individuals who share similar codes to that of the work environment will be more likely to be satisfied with their work and persist in the field. The RIASEC structure is widely validated for a number of different measures (Bullock, Andrews, Braud, & Reardon, 2010). One measure is the Self-Directed Search (SDS; Holland, Powell, & Fritzsche, 1994), a self-administered tool that links an individual's interests and abilities to a RIASEC type and work environments. For satisfactory career decisions, an individual must consider activities in which they possess both interests and skills (Holland et al., 1994). Anecdotally, the conceptual underpinning of this theory is logical to assume. Many individuals can rule out vocational options solely based on their skills; for example, a student who continuously struggles in math may not choose a career

as an engineer. For those with many talents and interests, however, career decision-making may be more complex (Achter, Lubinski, & Benbow, 1996; Emmett & Minor, 1993; Stewart, 1999).

Just as some researchers examined the utility of Holland's (1997) model with diverse populations (e.g. Fouad & Mohler, 2004), Lubinski and colleagues demonstrated the validity of the RIASEC model for samples of gifted individuals (Lubinski, Benbow, & Ryan, 1995; Lubinski, Schmidt, & Benbow, 1996). Given the moderate correlation between abilities and interests, it is reasonable to wonder if high achieving and gifted students possess different interests than their peers (Vock et al., 2013). In the few studies to date that have addressed this question, researchers found that high achieving students do indeed differ in vocational interests, yet results concerning which RIASEC domains are mixed (Schmidt et al., 1998; Sparfeldt, 2007; Vock et al., 2013). A consistent finding in the literature, however, is that gifted students display stronger investigative interests (Schmidt, Lubinski, & Benbow, 1998; Sparfeldt, 2007; Vock et al., 2013). Although this population may have varying levels of interests, Carduner, Padak, and Reynolds (2011) found that honors students did not cite vocational interest assessments as particularly helpful nor did they provide them with new information. Given that career counselors most frequently use these assessments with clients, the high achieving population may therefore not receive the most effective assistance in academic advisement and career exploration (Dougherty, 2007). If this is the case, counselors and advisors must consider other avenues and focus less on the sole use of self-exploration tools with high achieving students (Carduner et al., 2011).

Although recent trends in career literature address these limitations and suggest a shift from trait and factor approaches to value-based and holistic methods (Kerr & Sodano, 2003; Maxwell, 2007), practitioners are still able to utilize the many applications of Holland's (1994)

theory (Vernick, 2002). For instance, Vernick (2002) suggested that counselors can improve the career exploration process for high achieving students by supplementing interest inventories with additional needs-based measurements. The cognitive information processing theory (CIP; Peterson, Sampson, & Reardon, 1991; Peterson, Sampson, Reardon, & Lenz, 1996) is another career theory focused on helping clients in their career-decision making process. CIP theory posits that effective career problem solving and decision-making requires effective examination of self-knowledge, occupational knowledge, decision-making skills, and higher-order processing domains (Sampson & Chason, 2008). Although Holland's model and CIP theory developed within separate theoretical frameworks, they share some very important conceptual similarities. Both theories help practitioners understand the career development process, provide tools to help clients be effective career problem solvers, and emphasize the acquisition of self and occupational knowledge.

Researchers within the past decade have begun to explore the use of interest inventories such as Holland's SDS (Holland et al., 1994) in combination with the Career Thoughts Inventory (CTI; Sampson, Peterson, Lenz, Reardon, & Saunders, 1996), a CIP-based instrument (Wright, Reardon, Peterson, Osborn, 2000; Vernick, 2002). The foundation of the CTI is that problematic beliefs and maladaptive cognitions may hinder an individual's ability to integrate knowledge about the self and potential occupations, thus preventing rational thinking and decision-making (Saunders, Peterson, Sampson, & Reardon, 2000). The CTI assesses global levels of dysfunctional career thinking in addition to three specific sub-scales: Decision-Making Confusion, Commitment Anxiety, and External Conflict. Decision-Making Confusion measures the degree to which an individual believes they can initiate or maintain career decisions, Commitment Anxiety assesses concern about the potential outcomes of committing to a decision,

and External Conflict reflects attempts to balance the opinions of others with self-perceptions (Sampson et al., 1996).

Some clients may struggle to process and utilize information they receive from interest inventories; as a result, the CTI could serve as a useful screening tool to ensure that clients get the most from their results (Vernick, 2002; Wright et al., 2000). When used in conjunction with the SDS, the CTI can identify aspects of the career decision-making process that prove challenging for clients, help to identify clients whose negative cognitions may impede their ability to use the SDS, and determine the appropriate level of service required (Vernick, 2002; Wright et al., 2000). Essentially, practitioners can use the CTI to help clients who feel stuck in making a career decision (Reardon & Wright, 1999). Moreover, multiple previous studies demonstrated that dysfunctional career thoughts strongly related to unclear interests, abilities, and goals (Dipeolu, Sniatecki, Storlie, & Hargrave, 2013; Galles & Lenz, 2013; Sampson et al., 1996; Saunders et al., 2000).

In spite of suggestions to use the CTI in conjunction with RIASEC-based assessments, few studies put it to the test (Bullock-Yowell et al., 2012; Wright et al., 2000; Vernick, 2002). Railey and Peterson (2000) examined the interests and career thoughts of female inmates and probationers and Bullock-Yowell and colleagues (2012) studied the same constructs for unemployed adults. Nonetheless, the study of career thoughts of diverse populations is widespread in recent career literature and studies include individuals with attention deficit hyperactivity disorder (Dipeolu et al., 2013), students with disabilities (Dipeolu, Reardon, Sampson, & Burkhead, 2002), racially and ethnically diverse college students (Osborn, Howard, Leierer, & Stephen, 2007), and individuals with depression (Saunders et al., 2000). Just as career problem-solving has been examined for different social groups based on constructs such as race,

disability, and mental illness, if high achieving and gifted students indeed comprise a subculture (Levy & Plucker, 2003; Robinson et al., 2000) then their career experience warrants examination. Although some researchers argue that career decision-making for high achieving students is unique in some ways (Dougherty, 2007; Greene, 2006; Kerr & Erb, 1991; Kerr & Sodano, 2003; Kim, 2010), recent findings concerning the vocational preferences of gifted and high achieving students are limited (Sparfeldt, 2007). Further, no studies of which the author is aware specifically explored dysfunctional career thoughts in relation to RIASEC domains on Holland's SDS for high achieving college students.

It is important that all students succeed in education and employment. High achieving students represent a potentially overlooked population (Greene, 2006; Hébert & McBee, 2007). The purpose of the present research was to explore the potential relationship between academic achievement, interests and skills, and career thoughts. The following research questions were measured using quantitative statistical analysis:

1. Is there a positive relationship between academic achievement and occupational areas to consider based on high interests and high skills?
2. Is there a positive relationship between academic achievement and dysfunctional career thoughts?
3. Is there a positive relationship between occupational areas to consider and dysfunctional career thoughts?
4. Is there a difference between students identified as honors and/or gifted and those who do not identify as honors and/or gifted in relation to dysfunctional career thoughts and occupational areas to consider pursuing?

CHAPTER II
Method

Participants

The initial sample consisted of 150 students at two southeastern U.S. universities. Four participants identified as third-year students, three were fourth-year or higher, and one participant reported as a graduate student. The data from these students were eliminated from the final dataset, which resulted in a final sample of 143 first- and second-year undergraduate students.

Demographic characteristics for participant age, gender identity, race/ethnicity, average family income, and highest level of school completed by each parent are presented in Table 1 with the frequency and percentages for each category. Concerning participant's academic standing, 42 (29.4%) reported they were undecided about their college major, 52 (36.4%) were decided and not considering other options, and 49 (34.3%) were decided but still considering alternatives. The final sample consisted of 40 (28%) university honors students and 55 (38.5%) students participated in K-12 gifted/talented programming at some point in their academic history. Academic achievement was defined as a continuous variable based on ACT scores, enrollment in a university honors program, and/or participation in gifted/talented programming. ACT scores in the current study ranged from 20 to 35, $M = 27.51$, $SD = 3.61$. While some studies (e.g. Geiser & Santelices, 2007) question the use of standardized tests, evidence continues to suggest that ACT scores, either alone or in combination with high school GPA can predict college performance success (ACT, 1998; Robbins et al., 2006). Given that the students in this sample likely had different high school experiences and most did not know their college GPA because they were first-year students, at the risk of too much variability in reported GPA, the universal measure of ACT scores was used.

Table 1

Demographic Characteristics of Participants

Item	Category	Frequency		Percentage	
Gender Identity	Male	42		29.4	
	Female	100		69.9	
	Other	1		0.7	
Age	17	1		0.7	
	18	99		69.2	
	19	34		23.8	
	20	8		5.6	
	21	1		0.7	
Race/Ethnicity	African American/Black	5		3.5	
	American Indian	1		0.7	
	Asian/Asian-American	6		4.2	
	Caucasian/White/European	124		86.7	
	Hispanic/Latina/Latino	2		1.4	
	Multi-Racial/Multi-Ethnic	3		2.1	
	Other	2		1.4	
Average Family Income	Less than 10,000	3		2.1	
	10,000 to 19,999	3		2.1	
	20,000 to 29,999	8		5.6	
	30,000 to 39,999	8		5.6	
	40,000 to 49,000	6		4.2	
	50,000 to 59,000	5		3.5	
	60,000 to 69,999	14		9.8	
	70,000 to 79,999	12		8.4	
	80,000 to 89,999	11		7.7	
	90,000 to 99,000	11		7.7	
	100,000 to 149,000	27		18.9	
	150,000 or more	27		18.9	
	Unknown	8		5.6	
Highest Degree		Mother	Father	Mother	Father
	No schooling	0	1	0.0	0.7
	Elementary only	1	1	0.7	0.7
	Some high school, DNF	3	3	2.1	2.1
	High school graduate	11	13	7.7	9.1
	Some college credit	21	16	14.7	11.2
	Trade/technical/vocational	2	9	1.4	6.3
	Associate degree	15	9	10.5	6.3
	Bachelor's degree	53	43	37.1	30.1
	Master's degree	23	28	16.1	19.6
	Professional degree	6	11	4.2	7.7
	Doctorate degree	4	5	2.8	3.5
	Unknown	4	4	2.8	2.8

Note. $N = 143$

Procedures

Recruitment for participants primarily came from Sona Systems, a cloud-based research and participant management software offered in the Department of Psychology at the author's university. Sona Systems is an online portal where students can sign up to participate in online and/or in-person research studies. Those who participated through the Sona Systems program received course credit in their undergraduate psychology course. In addition, recruitment efforts included a research announcement sent via e-mail to the honors program directors at two universities and to the instructors for a career exploration course designed for undecided students.

Participants completed a series of in-person surveys, which included a demographic questionnaire, the Self-Directed Search (SDS; Holland, 1994), and the Career Thoughts Inventory (CTI; Sampson et al., 1996). Respondents reviewed an informed consent statement and indicated consent by signing in the designated area. Additionally, participants were given the option to receive a copy of their SDS results and if they elected to do so, they were instructed to provide a second signature and e-mail address. Once participants consented to participate, they were instructed to complete the set of assessments.

A number of measures were used to protect the confidentiality of all participants. All assessments, except the SDS if requested by the student, were completely anonymous and no identifying information was collected. If participants elected to receive a copy of their SDS results, a copy of the SDS was made for the student and their identifying information was removed from the data. Each participant received a packet of assessments and each set contained a unique identification code. If students did not pick up their SDS results by the designated date, the copies were shredded.

Measures

Demographics. Background information was gathered from participants using a brief survey. Basic demographic questions included age, year in school, gender identity, and race/ethnicity.

Academic achievement. Academic achievement was divided into three categories. First, high achievement functioned as a continuous variable based on ACT scores. Second, college honors students were identified by their response to a yes/no item. Last, gifted students were identified by their indication (yes/no) that they previously participated in gifted/talented programming. Although gifted selection criterion varies, it is generally based on high academic achievement measures such as intelligence test scores, academic grades, and outstanding academic achievement in specific domains (Carman, 2013).

Vocational interests and skills. The Self-Directed Search (SDS; Holland, 1990) was used to measure accumulating preferences and self-reported competencies. The SDS consists of six scales with 38 items each. Respondents replied like/dislike regarding activities that they would like to do (six scales of 11 items each) such as work as a volunteer, fix electrical things, take a physics course, and write novels or plays. Then, they indicated yes/no to perceived competencies (six scales of 11 items each) including "I can change a car's oil", "I can act in a play", and "I am a good public speaker". Respondents also reported their feelings and attitudes about specific occupations (six scales of 14 items each) such as bookkeeper, sales manager, journalist, botanist, speech therapist, and electrician. Last, using a scale of 1 (low) to 7 (high), participants rated their perceived traits (two sets of six ratings) corresponding to a RIASEC type. Based on Holland's (1997) theory of personalities and work environments, the SDS provides summative scores on each of the six personality types known as Realistic, Investigative, Social,

Enterprising, and Conventional (RIASEC). Holland (1985) reported KR-20 internal consistency for SDS summary scales ranging from .86 to .91 and 1 to 4 week retest reliability estimates ranging from .70 to .89. Hundreds of research studies have been conducted utilizing the SDS with generally favorable results (Osipow, 1993). Occupational areas to consider pursuing were compiled as an aggregate of interests and competencies. Total recorded interests and competencies were aggregated to create a *pursue* variable. Based on Holland's (1997) theory, in order to be satisfied and remain in a vocation, career seekers should consider fields in which they express both an interest and skill.

Career thoughts. The Career Thoughts Inventory (CTI; Sampson, Peterson, Lenz, Reardon, & Saunders, 1996) was used to measure dysfunctional thinking in career problem solving and decision-making. The CTI consists of 48 items on a 4-point Likert-type scale ranging from strongly disagree to strongly agree and it produces a sum score of dysfunctional career thinking. The tenets of cognitive information processing theory (Peterson Sampson, & Reardon, 1991; Peterson, Sampson, Reardon, & Lenz, 1996) provide the criteria for dysfunctional thoughts. Item examples include "I'm so confused, I'll never be able to choose a field of study or occupation", "I get upset when people ask me what I want to do with my life", "I'm afraid if I try out my chosen occupation, I won't be successful", and "I can't be satisfied unless I can find the perfect occupation for me". In addition, the assessment is divided into three construct scales. The Decision-Making Confusion subscale consists of 14 items and measures individuals' ability to initiate or sustain the decision making process. The Commitment Anxiety subscale consists of 10 items and examines the extent to which an individual's anxiety interferes with his or her ability to commit to a career decision. The External Conflict subscale consists of five items and measures one's ability to balance input from others. Higher scores on each scale is

an indication of more negative or dysfunctional career thinking. Internal consistency reliability coefficients have been reported between .93 and .97 for the CTI total, .90 and .94 for the Decision Making Confusion subscale, .79 and .91 for the Commitment Anxiety subscale, and .74 and .81 for the External Conflict subscale.

CHAPTER III
Results

A correlation matrix for all study variables including academic achievement, aggregated likes, aggregated abilities, *pursue,* and the total scores and sub-scale scores of the CTI is presented in Table 2. Detailed results of the research questions are discussed below.

Research Question 1

A hierarchical linear regression was performed to examine whether there was a positive relationship between academic achievement and occupational areas to consider based on high interests and high skills. The variable *pursue* was calculated based on a summative score of interests and skills and indicated the number of occupational areas to consider. ACT scores were entered in Step 1 (it is a broad measure of academic achievement), followed by experiences in gifted/talented and honors student programming (Step 2). The linear combination of academic achievement variables was significantly related to amount of *pursue* options based on the frequency of self-reported interests and skills. The sample multiple correlation coefficient on Step 1 was .27, indicating ACT scores explained 7% of the total variance in *pursue* options (R^2 = .07, $F(1, 131) = 10.54$, $p < .01$). Experiences in gifted/talented and honors programming explained an additional 6% of the total variance ($R^2 = .13$, $F(2, 129) = 4.24$, $p < .05$), resulting in total multiple correlation coefficient of .36. ACT scores and participation in gifted/talented programming yielded significant part correlations, $r_{part} = .21$, $p < .05$ and $r_{part} = .23$, $p < .01$, respectively. Overall, the results of the study suggest that participation in gifted programming and high academic achievement is related to a greater number of career options to consider pursuing.

Table 2
Correlation Matrix for Study Variables

				Correlations									
Variable	N	M	SD	1	2	3	4	5	6	7	8	9	10
1. Pursue	143	0.28	0.45	---									
2. Abilities	134	27.51	3.61	.905**	---								
3. Likes	142	0.39	0.49	.872**	.582**	---							
4. EC	142	51.05	21.00	-.023	-.067	.032	---						
5. CA	142	10.56	7.13	.087	.020	.143	.428**	---					
6. DMC	142	15.66	6.24	-.085	-.104	-.044	.505**	.678**	---				
7. CTI	142	4.92	2.86	-.003	-.069	.073	.645**	.834**	.904**	---			
8. Gifted	143	24.81	8.85	.319**	.330**	.230**	-.012	.000	-.038	-.019	---		
9. ACT	143	33.97	10.19	.279**	.222**	.277**	-.101	-.001	-.193*	-1.09	.300**	---	
10. Honors	143	58.78	16.94	.068	.039	.086	.019	.026	-.181	-.057	.209*	.548**	---

Note. $*p < .05$. $**p < .01$.

Research question 2

To determine if there is a positive relationship between academic achievement and dysfunctional career thoughts a hierarchical linear regression was performed. Results of the regression analysis indicated that the linear combination of academic achievement variables was not significantly related to total scores on dysfunctional career thoughts. ACT scores did not explain a significant portion of variance (R^2 = .01, F(1, 130) = 1.56, p = .21) and neither did being an honors or gifted student (R^2 = .01, F(2, 128) = .084, p = .92). In addition, regression analyses revealed results concerning the sub-scales of the CTI. For commitment anxiety and external conflict, ACT scores did not explain a significant portion of variance (R^2 = .00, F(1, 130) = .00, p = .96; R^2 = .01, F(1, 130) = 1.35, p = .25) and neither did being an honors or gifted student (R^2 = .00, F(2, 128) = .09, p = .91; R^2 = .02, F(2, 128) = .288, p = .75). ACT scores did explain a significant portion of variance (R^2 = .04, F(1, 130) = 5.23, p < .05) in decision-making confusion, yet being an honors or gifted student did not (R^2 = .05, F(2, 128) = .65, p = .52). Specifically, higher ACT scores related to less decision-making confusion.

Research question 3

To evaluate if there was a positive relationship between occupational areas to consider and dysfunctional career thoughts a bivariate correlation was performed. Results indicated that there was not a significant relationship between career options and dysfunctional career thoughts, r = -.00, p = .97. Although students with high academic achievement had more occupational areas to pursue because they had high interests and high skills, it did not result in more dysfunctional career thoughts.

Research question 4

Two separate independent sample t-tests were conducted to examine the difference between students identified as honors and/or gifted and those who did not identify as honors and/or gifted in relation to dysfunctional career thoughts and occupational areas to consider pursuing based on interests and skills. An independent sample t-test was performed to compare occupational interests, skills, and dysfunctional career thoughts for honors and non-honors students. Results indicated a significant difference in the scores for decision-making confusion, a subscale of the CTI, with non-honors students (M = 11.36, SD = 7.00) expressing more decision-making confusion than honors students (M = 8.50, SD = 7.12); $t(140) = 2.18$, $p = .031$. Additionally, non-honors students (M = 4.39, SD = 3.80) expressed significantly more preferences for Enterprising occupations than honors students (M = 2.83, SD = 3.14); $t(141) = 2.51$, $p = .014$. Further results for group differences in preferences and self-reported abilities for honors and non-honors students can be found in Table 3. An independent sample t-test was also conducted to compare gifted and non-gifted students. No significant difference was found between the two groups in dysfunctional career thoughts, $t(139) = 0.22$, $p = 0.83$. Gifted students displayed significantly higher levels of total interests and skills as well as more Investigative interests and competencies, Artistic interests and competencies, Social interests, Enterprising competencies, and Conventional competencies. Detailed results for preferences and perceived competencies for those who participated in gifted/talented programming and those who did not are displayed in Table 4.

Table 3

Independent Samples T-Test Results for Honors and Non-Honors Students

	Honors		Non-Honors		
	M	SD	M	SD	*t*-test
R Likes	2.52	2.88	2.28	2.45	-0.51
R Abilities	3.23	2.62	3.61	2.97	0.72
I Likes	4.90	3.46	4.06	3.29	-1.36
I Abilities	7.55	2.97	6.88	3.16	-1.15
A Likes	5.05	3.06	4.18	3.22	-1.46
A Abilities	5.20	2.85	3.94	2.84	-2.38*
S Likes	5.85	3.13	5.54	2.62	-0.59
S Abilities	7.33	2.86	7.82	2.92	0.91
E Likes	5.40	3.23	5.77	3.00	0.64
E Abilities	6.45	2.77	6.74	3.04	0.52
C Likes	2.30	2.30	2.50	2.85	0.41
C Abilities	4.85	2.44	4.73	2.83	-0.24
Likes Sum	26.03	10.31	24.34	8.22	-1.02
Abilities Sum	34.60	10.24	33.72	10.21	-0.46
Pursue	60.63	19.19	58.06	16.03	-0.81

Note. R = Realistic; I = Investigative; A = Artistic; S = Social; E = Enterprising; C = Conventional

*$p < .05$. **$p < .01$.

Table 4

Independent Samples T-Test Results for Gifted and Non-Gifted Students

	Gifted		Non-Gifted		
	M	SD	M	SD	*t*-test
R Likes	2.35	2.86	2.34	2.40	-0.00
R Abilities	3.29	2.80	3.62	2.94	0.66
I Likes	5.18	3.37	3.74	3.24	-2.55*
I Abilities	8.47	2.53	6.18	3.16	-4.76**
A Likes	5.16	3.25	3.99	3.09	-2.17*
A Abilities	5.33	3.03	3.67	2.62	-3.46**
S Likes	6.44	2.64	5.14	2.75	-2.78**
S Abilities	8.15	2.41	7.39	3.17	-1.61
E Likes	5.84	3.05	5.57	3.09	-0.49
E Abilities	7.29	2.52	6.25	3.17	-2.16*
C Likes	2.45	2.46	2.47	2.86	0.04
C Abilities	5.71	2.45	4.22	2.70	-3.32**
Likes Sum	27.42	8.77	23.25	8.58	-2.80**
Abilities Sum	38.24	8.73	31.33	10.22	-4.14**
Pursue	65.65	15.33	54.59	16.61	-3.98**

Note. R = Realistic; I = Investigative; A = Artistic; S = Social; E = Enterprising; C = Conventional

*$p < .05$. **$p < .01$.

CHAPTER IV
Discussion

The primary purpose of the current study was to understand the relationship among academic achievement, self-reported interests and skills, and dysfunctional career thoughts. Academic achievement functioned as a continuous variable based on ACT scores. In addition, enrollment in gifted/talented and/or honors programming classified specific types of high achieving students. Participants indicated their interests and perceived abilities for general activities and specific occupations in each RIASEC domain. Based on Holland's (1997) suggestion that students ideally select occupational areas based on a combination of their expressed interest and potential skills, summative interests and competencies scores determined the amount of career options to consider pursing. Then, respondents completed an assessment, which examined potential dysfunctional career thoughts surrounding career problem solving and decision-making in relation to three constructs: decision-making confusion, commitment anxiety, and external conflict.

The findings of the present study addressed four research questions. First, the results suggested that both ACT scores and participation in gifted programming significantly related to having high interests and high skills and therefore a greater number of career options to consider. Experiences as an honors student in combination with those in gifted/talented programming explained a significant amount of variance concerning interests and skills; however, participation in a college honors program alone did not yield a significant correlation. One explanation for this finding may be the definition used to define high achievement. ACT scores are derived from a standardized assessment of aptitude and although entrance into gifted/talented programming varies by state, the most common criterion is standardized IQ scores (National Association for Gifted Children, 2010). Admittance into a college honors program, however, is more fluid and

common selection criteria include high school GPA, ACT scores, and student involvement in leadership service. The variability that may exist among students in an honors program could make them less likely to possess higher interests and skills.

Although having many occupational areas to consider may lead to career indecision (Emmett & Minor, 1993; Kerr & Sodano, 2003; Parris, Owens, Johnson, Grbevski, & Holbert-Quince, 2010; Stewart, 1999), the results of the current study did not support this line of research. In the present study, as ACT scores got higher, decision-making confusion decreased. Further, there was neither a significant relationship between being an honors and/or gifted student and dysfunctional career thoughts nor between occupational areas to pursue and dysfunctional career thoughts. Some literature suggests that having multiple interests and abilities results in overchoice and may make it difficult for high achieving students to commit to a career choice (Rysiew, Shore, & Carson, 1994; Rysiew, Shore, & Leeb, 1999). The results of the current study, however, are consistent with previous research findings that more vocational options is not problematic nor does it contribute to career decision-making difficulty (Sajjadi, Rejskind, & Shore, 2001). In addition, the present findings support the research of Carduner and colleagues (2011) which found that honors students recognized that they had greater aptitudes in numerous areas, but they remained confident in their ability to pursue any major.

The final research question examined the difference between students identified as honors and/or gifted and those who did not in relation to their dysfunctional career thoughts and number of occupations to consider pursuing. The results of the current study revealed that non-honors students scored significantly higher on decision-making confusion in comparison to those who were in honors programming. Therefore, at least for one particular sub-set of high achieving students, the present research once again supports the argument that high academic achievement

does not necessarily contribute to career decision-making difficulty (Carduner et al., 2011; Sajjadi et al., 2001). While there was not a significant difference in total interests and skills between the two groups, there was some disparity concerning specific RIASEC domains. Non-honors students expressed higher interest in Enterprising careers while honors students reported more Artistic competencies.

Interestingly, while honors and non-honors students displayed minimal differences, the comparison of gifted and non-gifted students yielded more results that were significant. In sum, gifted students reported significantly higher competencies and interests and as a result, more occupational areas to consider pursuing. Specifically, gifted students demonstrated more Investigative and Social interests and higher Investigative, Artistic, Enterprising, and Conventional abilities. In view of the fact that sole standardized IQ scores most commonly determine participation in gifted programming (Carman, 2013; Mcclain & Pfeiffer, 2012), it is worth noting that this classification of intelligence may be the largest contributor to vocational options.

While some researchers suggest that high achieving youth likely have substantially different career-related interests in comparison to their less achieving peers (Ackerman & Heggestad, 1997), overall the literature has yielded mixed results. Previous findings consistently indicated that gifted individuals' display more interest in Investigative activities (Astin, 1993; Sparfeldt, 2007; Vock et al., 2013) which is consistent with the current study; however, findings concerning Realistic, Artistic, and Social interests vary (Lubinski et al., 1995; Sparfeldt, 2007). In fact, a few studies showed that gifted students (as measured by IQ) and high achievers (as measured by GPA) displayed weaker social interests (Sparfeldt, 2007; Vock et al., 2013) which conflicts with the results of the current study. In contrast to interests, self-reported abilities have

received little attention in research (Swanson & Gore, 2000, for a historical review), despite being an essential component to the well-established Holland career theory of person-environment fit (Holland, 1997) and included in popular inventories including the SDS (Brady-Amoon & Fuertes, 2011). The current study contributes to the existing literature on the use of person-environment fit measures and adds a unique perspective regarding the separate RIASEC domains for gifted and high-achieving college students.

Limitations

Several limitations to this study warrant mention. The current study came from a convenience sample that was predominately white, from an educated family, and financially privileged; therefore, the generalizability of findings may be limited to students in these demographic groups. Additionally, for one university used in the study, the admitted student population is primarily comprised of those who were in the top 10% of their high school class. This means that the comparison group of non-high achieving students may not be representative of the larger population. The majority of participants were between the ages of 18 and 19 years old which also limits generalizability. Given that the purpose of the study was to examine career decision-making difficulty, it made sense to target students in their first two years of study while they are likely still in the process of exploring career options. However, the restricted sample did not address students further along in their academic career or non-traditional students. Future research might investigate any differences in reported interests and skills and/or the dysfunctional career thoughts that may arise for a wide range of demographics, such as third and fourth year students, non-traditional students, and underprepared students (just to name a few).

Another limitation of the study is that it primarily relied on self-selected participation. The instructors of their career exploration course or honors seminar presented some of the

participants with the opportunity to volunteer for the study. Recruitment for the remaining participants came from an online portal in which students could volunteer for research studies for course credit in a psychology course. Self-selection can result in bias due to the possibility that those who participated may differ from those who chose not to participate. For example, students in the psychology course had the option of completing research or a written assignment for credit. It is possible that students who chose not to participate prefer a more creative expression of their ideas, and therefore wrote an essay, or perhaps those who did not participate waited until the end of the semester when there were no spaces available. In all, participants may differ on characteristics not directly related to the current study, such as conscientiousness. Any of these scenarios could lead to potential bias in the data.

The inconsistent definitions of those who are high achieving, gifted, and honors constitutes a limitation for any study interested in examining this population. The continuous modification of the terms used makes it difficult for researchers to select a sample of gifted and high achieving individuals (Carman, 2013). Involvement in an honors program largely depends on self-identification (Achterberg, 2005) and the honors programs in the present study require that students take initiative and apply for admission. Although the present study attempted to use broad measures (ACT scores, participation in honors/gifted programs) in order to reach all potentially high achieving students and include those who may self-select out of standardized programming, it is without doubt that the study failed to attend to all academically advanced individuals. The potential for giftedness and academic success exists in all populations; however, a number of individuals remain underrepresented in gifted and honors programs (Bianco, 2005). For instance, barriers such as environmental constraints, low expectations, and stereotypic beliefs hinder the referral of students with disabilities (Bianco, 2005) and black students (Ford & Harris,

1995) for gifted and honors programs. Future researchers must continue to work toward a unified definition of high achieving populations while remaining inclusive of different socio-cultural groups. Researchers might examine the career decision making, interests, and perceived skills of different populations of academically advanced college students.

Implications for Future Research and Practice

The current study has numerous implications for theory and practice. The findings of the present study contribute to the controversy in the literature surrounding the existence and influence of multipotentiality. Frequently referred to as the ability to select and develop any number of competencies (Fredrickson, 1979), multipotentiality has been suggested to pose great challenges for high achieving students (Maxwell, 2007). Although the study did not directly address multipotentiality, some may consider those with elevated interest and competency profiles to be multipotentialed. It appears as though ACT scores and participation in gifted programming relates to high interest and ability in multiple areas on career exploration assessments such as the SDS; however, in the current study, it did not contribute to any cognitive difficulties in making educational and career decisions and commitments. Therefore, the results of the present study are consistent with arguments against the existence and utility of multipotentiality and supports the fact that many scholars debunked the notion (i.e. Achter, Benbow, & Lubinski, 1997; Achter et al., 1996; Sajjadi et al., 2001).

Growing recognition of the need to tailor career interventions for diverse populations exists, given that traditional trait-factor approaches may not address the unique experiences of individuals (Cook, Heppner, & O'Brien, 2005). There is a relatively large body of research regarding the career aspirations of high school and college students. Less research exists, however, about the career expectations among individuals identified as gifted or talented

(Perrone, Tschopp, Snyder, Boo, & Hyatt, 2010). The current study adds to the literature on interests and skills of high achieving students and demonstrates that they are indeed a diverse population.

Most importantly, administrators, practitioners, and educators can benefit from the results presented in the current study. Recently, there has been an increased push at many universities for students to commit to an educational and career path early on in their training and finish their degree in four years. This objective occurs during a time in which students face the accumulating financial burden of continuing their education and the need to make decisions in the face of a competitive job market in our quickly evolving economy. The reality of this situation lends itself to a potentially stressful experience for any college student in their decision-making process. Given the expectations of high achieving students, both internal and external, they are likely to take on additional demands including a double major and/or minor, extracurricular activities, and leadership responsibilities (Achterberg, 2005) which may make it difficult to finish in a designated amount of time. Administrators should be aware of this possibility and address their career needs early on in order to help solidify their career decisions and prevent them from changing their major multiple times.

Although the high achieving participants in the present study did not reveal cognitive barriers to effective decision-making, they were still more likely to express many interests and skills. Practitioners must help gifted and honors students to navigate their many interests and abilities and perhaps find ways for them to express their preferences. For example, for a student confident in their decision to pursue an Investigative career, they may still have expressed strong interest in Social domains and could enjoy participating in volunteer work at a non-profit agency.

It is necessary to acknowledge the educational and career experiences of high achieving students to ensure that they receive the best care possible.

CHAPTER V
Conclusion

The current study sought to understand the potential relationship among academic achievement, occupational choices, and career decision-making and problem solving. Results suggest that high achieving students, based on ACT scores and those who participated in gifted/talented programming experience a greater number of career options to consider. Interestingly, having more options did not relate to experiencing dysfunctional career thoughts. Students involved in gifted and/or college honors programs did differ from their non-high achieving peers in reported interests and competencies. The current study sheds light on the differences among students with varying intelligence and achievement levels and acknowledges that the career development process is not homogenous.

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VITA

Justina Anne Farley was born in Albany, New York and was raised in Cobleskill, New York. She attended Ryder Elementary School, Golding Middle School, and continued to Cobleskill-Richmondville High School. She obtained a B.A. degree in Psychology from The University at Albany in 2009. After graduation, she headed to the University of Tennessee, Knoxville where she is currently completing the requirements for her doctorate degree in Counseling Psychology. In August 2014 she will begin her 2000-hour clinical training internship at the University of Tennessee Student Counseling Center.