Exploring Proximal Influences on the Academic and Research Career Choices of African American Female Graduate Students

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ABSTRACT

Roy Anthony Charles: Exploring Proximal Influences on the Academic and Research Career
Choices of African American Female Graduate Students
(Under the direction of George Noblit)

The United States is rapidly being comprised of a more diverse population.

Therefore, it is critical that we better understand the academic experiences and career

decision-making processes of members of underrepresented groups in fields that lead to

research careers in an increasingly knowledge-based economy. For this study, a conceptual

framework that drew on academic persistence in higher education and Social Cognitive

Career Theory (SCCT) literature was used in conjunction with a qualitative form of inquiry

known as the Framework method.   A brief survey and semi-structured interviews were

used to collect data on the perceptions of African-American, female graduate students

across seven potential proximal influences to their career decision-making process and

gauge their interest for entering research careers.

The findings of this study indicate that the study participants were influenced most

by proximal influences (i.e., faculty) associated with their academic and professional

development, but not necessarily from within their academic program, when it came to

determining their interest in research careers. However, external proximal influences (i.e.,

family, peers, external community) acted as sources of support, and an escape from the

academic environment, which played an important role in their continued academic

persistence.

ACKNOWLEDGEMENTS

Have Faith in God -- Mark 11:22

Those four words have brought me to this milestone. For that reason, I must thank God for the many blessings I have received in life, and the strength that he has empowered me with when I faced the challenges.

One of the greatest blessings I have been given is to be the son of Roy and Wendy Charles and to have two wonderful brothers Stephen and Andrew. Mum and Dad, you have taught me many things including to love God, stand tall, be truthful and fair, speak my mind, be humble, serve others, value education and work hard, to name a few. Your guidance and support have made it possible for me to pursue my dreams with confidence. Thank you. As the oldest of three sons, my brothers, Stephen, and Andrew, have been an inspiration for me to achieve, however, inspiration was not always enough, and their support, whether it was a laugh that was right on time, an attentive ear during a difficult time, or a message of wise words at an unexpected time, my brothers are my keeper, and I theirs. Thank you. My blessings continue beyond my immediate family, as I have also been blessed to be part of a large, nuclear, family, and the love and support of my grandparents, aunts, uncles, and cousins has also kept me moving forward and striving to be a better man tomorrow, than I am today; and beyond this nuclear family is an equally important extended family. Whether I refer to you as a brother, sister, aunt, uncle, cousin or simply extend you the respect of traditional salutations such a Mr or Ms/Mrs, I must

acknowledge that wonderful people have been brought into my life through friendship and family and I have been blessed by knowing all of you.

When I left my hometown of Cambridge, MA for college in 1991, I had little idea of what would be in store for me. Like, as I believe many first-generation college students, I thought things would be like high school without having to come home to your parents every day. I left home with one career dream of being an architect, and stumbled upon a career passion of serving in higher education. While attending Roger Williams College (Bristol, RI), I met many wonderful people among the administration and faculty including Dean Karen Haskell, Jim and Rom Woodruff, Dwight Datcher, Ben Carr, and Scott Yonan. The individuals, through our work on the Minority Affairs Committee, helped me to understand what it meant to serve students, and especially support those from underrepresented and underserved backgrounds. Thank you for modeling for me what it means to be a dedicated to students. Additionally, being one of only a few underrepresented students at the college, my journey was shared with students from similar backgrounds who chose to be active in ensuring that the minority voices on campus were not left unheard, and while they don't know it, they inspired me to continue my work serving students after college. Varick, Erica, Maria, Macu, Kendra, Vinnie, Gary, Roger, and the many others who enriched my college experience, you helped me to focus on my passion to serve in within the higher education context. Thank you.

After college, I came home to Cambridge, ready to work in higher education, but the opportunities were not immediately available. Over the previous two summers, I had worked at the Massachusetts Institute of Technology (MIT) and before that Harvard University. Being from the Metro-Boston area, colleges and universities were not lacking, yet it wasn't until my internship director from MIT crossed paths and my name was shared

as someone who might fill an opening in Dr. Williams office. That opportunity panned out, and my career was launched at MIT and in higher education was launched, but to leave it at that point would do a disservice to what Dr. Clarence G. Williams did for me. Taking a chance on the referral of young man in need of an opportunity, Dr. William's hired me, supported me, and ultimately mentored me. He did so, with only one request which was that I pay him back by paying it forward and creating opportunities for others. Dr. Williams, and his wife Mildred have been a blessing, and I will always work to deliver on that agreement. In addition to working in Dr. William's office, I also had the opportunity to work in The Graduate Students Office with Dr. Isaac "Ike" Colbert, Ms. Margret "Margot"Daniels Tyler, Ms. Blanche Staton who all provided guidance in my development as a higher education professional, and with many other committed individuals on the staff. The majority of my time at MIT was spent in the GSO, and that is where my career path in higher education solidified. While at MIT, I enjoyed meeting and working with many more administrators, faculty, and students for whom there are too many to name. However, if you read this, and we shared time at MIT, then know that you have touched my life and helped to give it direction. Thank you to my MIT family.

While living in Cambridge, MA as a young professional, I had the opportunity to remain connected to my many friends from childhood, and make new friends across the area through both service and organizations. To my childhood friends, several of whom are considered in the previously stated extended family group, I never want to lose contact with you; and even if we don't communicate for days, weeks, months, or years, I hope that the next time we do, it will be as if no time has lapsed. Knowing each and everyone one of you has enhanced my life. Thank you. Also, to the many other friends I made through community service with the Concerned Black Men of Massachusetts, Inc., the State of

Young Black Boston (SYBB), or my brothers of Alpha Phi Alpha Fraternity, Inc., in particular the Epsilon Gamma Lambda and Rho Nu chapters, as well as those of the Richard C. Maclaurin Lodge, AFAM (MIT), with all of you I have grown, and I strive to continue to be a servant of all. Thank you for your friendship and brotherhood.

I left MIT and the Boston area to embark on my biggest journey to date. I left my hometown and region of the country to come to North Carolina and pursue a doctoral degree. There is nuance to how the decision came about, but an integral part of the decision was due to Dr. Henry Frierson who saw an emerging higher education administrator and challenged him to think beyond the scope of his duties, and learn the critical skills of evaluation and research. I want to thank Dr. Frierson for pushing me to learn more about the work for which I am passionate and for bringing me to the great state of North Carolina and The University of North Carolina at Chapel Hill. Before, I arrived, through my work at MIT, I also met individuals who would become part of my North Carolina family, once I arrived at UNC. The members of Dr. Frierson's Research Education Support (RES), Summer Pre-Graduate Research Experience (SPGRE), NC OptEd, and NC Alliance for Graduate Education and the Professoriate (NC-AGEP) programs, both staff and students welcomed me in together we worked to make a difference. Tracey Page and Phyllis Daniels you made my transition smooth, and you have been there from my first arrival. Then there is Nicole Lewis, Kathy Wood, Kacey Hammel, Rebecca Zulli, Karyl Askew, Dr. Valerie Ashby, and Col. Larry Campbell, all administrators and faculty from across the many affiliated schools, and the many students who came through those programs I would not have made it without all of you providing inspiration and being a part of the blessings in my life. I also had the pleasure of working in The Graduate School at UNC during the latter years of my program, and so I want to thank Dr. Leslie Lerea, for

everything you have done to make me a better professional and support me as a student; and to all of the staff at The UNC-CH Graduate School, I enjoyed working with all of you! Additionally, while at UNC, I have also had the pleasure of making friends both within and outside of the university, so to my many friends across the graduate and undergraduate student body and in the local community, including my Alpha fraternity brothers of the Beta Theta Lambda and the Mu Zeta chapters, thank you for being so supportive of me during my academic journey.

Before, I continue onto thanking my committee, there are a few individuals that I will name, as they have been consistent supporters of my doctoral journey. From a distance, friends and family from home and across the country, have offered consistent encouragement and support including Sarah Simpson, Michelle Madera, Melissa Wynn and her mother Mrs. Wynn, my cousin Georgette Charles and her husband Chris, my aunt Cheryl Charles (whose calls and texts always seemed to be right on time), Eric Crumpler, Michael Dobson, and Don C. Brunson. From my time in Chapel Hill, I want to thank Chris and Lauren Riddick, Allison Matthews, and Arjumand Siddiqi, it has been a long journey, and you have been there every step of the way. Also, from my time in Chapel Hill, there is C.J. Broderick, Jr., Brittani Miller, Penni Padget-Klinestiver, Sharon Thomas, Ashalla Freeman, Deb Stroman, Sibby Anderson-Thompkins, and so many others who offered encouragement often. Thank all of you. Now, I mentioned my family as one of my greatest blessings, and surely my many close friends are also, but one person has been a part of my life every day through the last few years of my doctoral studies, and I cannot thank her enough for all that she has done for me. Ms. Tekiae Warren, you are truly a blessing that came to me unexpectedly, and you have changed my life for the better. I thank you, and I love you.

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CHAPTER 1

No need is more urgent today than the full and successful participation of
minorities, particularly Blacks, Hispanics, and Native Americans, in the
nation's schools and colleges. Competitiveness and productivity as well as
equity and social justice demand that we give our attention to this
issue…The problem is complex, going beyond race and ethnicity to involve
many different kinds of people, in issues that are economic, social, academic,
psychological, and political. Ideally a series of interventions should begin at
birth and end with the successful hiring of more minority PhDs in the
nation's colleges and universities. We need to reverse current trends, create
a wholly new momentum and sustain our efforts until all minority groups are
fully involved and welcomed as students, teachers, and administrators at
every level of the American educational system (Stewart, 1988, p329)

This message was delivered by Dr. Stewart 25 years ago, and it is as critical an issue

and appropriate a call today as it was when it was first made.   The call for the greater

participation of African American[1], American Indian or Alaskan native, and Hispanics[2]

among college and university faculty remains both a need and a challenge for institutions,

but this need for trained researchers is not limited to colleges and universities. Currently,

the strength of United States economic competitiveness is being challenged due to a

shortage of highly trained workers who can meet the workforce demands of emerging U.S.

and global industries (American Association for the Advancement of Science [AAAS], 2001;

The Congressional Commission on the Advancement of Women and Minorities in Science,

Engineering and Technology Development, 2000). This challenge is in part because of an

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[1] The terms African American and Black are commonly used interchangeably in society to reference
individuals of African origin living in the United States who are not also of Hispanic origin. For the
purpose of this dissertation the term African American will be used throughout except when quoting
work by other authors who use the term Black.

[2] Hispanic ethnicity includes Mexican, Puerto Rican, Cuban, Central and South American, or other
Spanish Culture or origin, regardless of race.

economic shift from what has been largely a manufacturing economy to one that is progressively comprised of knowledge, service, and technology industries. These industries, especially ones involving research activities, increasingly require workers with higher levels of education and specialized talents. While the shift in economies has occurred, the task of meeting the needs of the workforce has been further complicated by the changing composition of the U.S. population. What was once a workforce primarily comprised of Caucasian workers with a sufficient number of them having advanced education has increasingly become ethnically and racially diverse but with limited higher education attainment. Therefore, given the current educational demands and the changing demographics of the U.S. workforce it is vital that we expand our understanding of how to increase the participation of members of underrepresented minority[3] (URM) groups in higher education, as well as how they decide whether they will enter research careers.

Economic and Demographic Educational Considerations

While increasing the participation of underrepresented minorities in higher education and research careers are matters of equity and social justice (Stewart, 1988), there are also practical considerations for increased inclusion that if left unattended will put U.S. competitiveness and productivity in jeopardy. The United States has experienced a shift in the U.S. economy from primarily manufacturing more to industries associated with knowledge, service, and technology. These evolving industries require a highly trained workforce that can work within innovative and rapidly changing environments (Biennial Report to Congress, 2002; Committee on Equal Opportunity in Science and Engineering [CEOSE], 2002). To this point, the U.S. workforce has not been able to meet the demand

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[3] Underrepresented minorities are commonly recognized as being individuals from African American (Black), American Indian, and Hispanic racial and ethnic backgrounds, unlike the broader term minorities which also includes Asian Americans, Alaskans, and Pacific Islanders.

for these workers in part due to demographic changes that are resulting in an increasing representation of URMs. Reports regarding the U.S. workforce have been published in 1987 and 1997 attempted to benchmark the periods in time and predict the rate at which the demographic shifts would occur (Johnston & Packer, 1987; Judy & D'Amico, 1997). The first two reports offered aggressive predictions of a demographic shift in the racial and ethnic composition of the U.S. population. The first study offered a prediction of a rapidly changing demographic composition resulting in majority minority U.S. population by the year 2000 (Johnston & Packer, 1987). This forecast was adjusted in the second study which pushed the forecast out to 2020, but showed that while slower the racial and ethnic composition of the U.S. was increasing for minorities within the workforce and shrinking for individuals of white backgrounds. A third installment of these reports has not been completed to date; however, the Hudson Institute, which published the reports, continues its work and acknowledges that the strength of tomorrow's workforce begins and ends with educating the changing U.S. population (Hudson Institute, 2013). Thus, regardless of when the U.S. labor force will reach a majority-minority [4] composition, the new industries are increasingly becoming dependent on individuals from underrepresented groups each year.

Yet, the growing need for URMs in the nation's workforce has not been matched with corresponding presence in higher education programs. This shortage of talent is especially true at the level of graduate education, which is becoming increasingly necessary to obtain desirable leadership positions in various research related fields. Many of those research fields that are in demand fall into the four domains that comprise science and

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[4] The phrase "majority-minority" is used to describe the point in time when the memberships of the various groups consider to be minorities collectively exceed that of the Caucasian/White group.

engineering (S&E), also known as , STEM[5], include the physical sciences, life sciences, social science, and engineering (National Opinion Research Center, 2001). Although, the terms S&E or STEM are well known, the fact that the social sciences, also known as the social, behavioral, and economic (SBE)[6] sciences are included in the those groups is not as well known. A survey of doctoral degree completion rates in 1990 indicated that 15,364 doctoral degrees were conferred in Science and Engineering (S&E), of which 885 (5.7%) were earned by underrepresented minorities. In the year 2000, the figure for URMs increased to 9.5% of S&E doctoral degrees (CEOSE, 2002). While what seemed to be a promising show of 4% growth was reported, these numbers were somewhat ambiguous as the average for the 10-year period was 6.82% (Women, Minorities, and Persons with Disabilities in Science and Engineering Report, 2002). Moreover, for the subsequent period of 2001-2010, the average rate across that period was 6.68%, representing a slight decrease from the average of the previous 10 years (Women, Minorities, and Persons with Disabilities in Science and Engineering Report, 2013). For this study, it is important to keep in mind that the SBE degrees earned are merely a subset of the already small percentages of earned doctorates described above. Furthermore, sadly, the low completion rates described are far below the 32% of potential URMs who are estimated to be of doctoral study age in the U.S. (Wilson Foundation, 2005). As the composition of the U.S. population continues to change, we must find ways to counter the low participation of URMs in higher. Otherwise, we can assume that the workforce readiness of available U.S. workers will decrease along with the strength of the economy.

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[5] STEM is an acronym used to describe the collective terms of Science, Technology, Engineering and Mathematics. As mentioned above, the classification of STEM, or S&E, includes social sciences. However, for this study the social sciences will be considered a separate group (see footnote 6)

[6] The social sciences are also known as the social, behavioral, and economic (SBE) sciences. For this study, SBE will be consider to be separate from STEM.

Both the factors affecting the structure of the present economy and U.S.'s lack of ability to meet the demands of the current workforce needs point to the importance of education. Additionally, given the historical marginalization and subsequent underrepresentation of certain segments of the U.S. population that appear to be growing, it is vital that we consider what has been done and what needs to be done to increase the participation of African American, American Indian, and Hispanics in the higher education.

Educational Considerations

As Stewart (1988) indicated, increasing the participation of underrepresented minorities in higher education was a matter of competitiveness, equity, and social justice that would require political, social, and academic considerations. While some efforts clearly began prior to his statement, others have seemed to be answers to the calls of him and others. The efforts to increase participation of underrepresented minorities in higher education stemmed from a significant political and social transformation that affected educational opportunities in the U.S about 50 years ago. The passing of both the Civil Rights Act of 1964 and the Economic Opportunity Act of 1965 created some opportunities that were more equitable for members of all groups of U.S. citizens. For example, in order to prepare individuals for future success, a broader focus on educational access, preparedness, and attainment was required. Beginning in 1964, the first federally funded educational opportunities programs (EOP) were established: Upward Bound (UB) and Talent Search (TS) in 1964, and Student Support Services (SSS) program in 1968. The last program, SSS, was established to serve disadvantaged and underrepresented students in higher education (TRiO History, n.d.) and laid the foundation for future higher education EOPs established to increase URM participation in research careers. In 1972, the Division of Research Resources of the National Institutes for Health (NIH) established the Minority Schools Biomedical Support (MSBS, now MBRS, Minority Biomedical Research Support)

program targeting URMs via 38 minority serving institutions (TRiO History, n.d.; Tyler, 1995). This initiative marked the start of the first program with the explicit purpose of providing URMs opportunities to develop the skills and knowledge that could lead to research careers. The years to follow saw more federally funded programs such as the NIH-Minority Access to Research Careers (NIH-MARC) in 1978; the National Institutes of Mental Health Career Opportunities in Research (NIMH-COR) circa 1981; and the TRiO Ronald E. McNair Scholars program in 1986. By the 1980s, federal programs were not the only opportunities available to students. Frierson (1981) called attention to the need for increased efforts to encourage minority participation in educational training that would lead to research and development careers. He recommended creating university-based research experience programs that could help facilitate student preparedness for research and development (R&D) careers (Frierson, 1981). By the late 1980s, university based summer research opportunity programs (SROPs) were recruiting students from all over the country (Tyler, 1995). While the various federal and university based programs provided opportunities for students to explore research training and prepare for graduate level education, many of these programs focused on the undergraduate years solely and do not provide formal support to students once they continue on to graduate school.

Although undergraduate students have the benefit of several educational opportunities programs being offered during the college studies, the options for graduate students are far more limited. Programs such as the National Science Foundation - Alliance for Graduate Education and the Professoriate (AGEP) and the National Institute for Health - Initiative for Maximizing Student Diversity are two prominent programs targeting the needs of URM graduate students. Yet, these have limited availability. For the majority of students in graduate school, this learning period, which is essential in preparing them for research careers, leaves them dependent on their programs and, more

likely, an individual faculty adviser for support and development (Pontius & Harper, 2006).

As students advance through their programs, the nature of graduate study encourages

them to work closely with a single faculty member, usually referred to as an adviser. These

relationships are usually assigned, occasionally developed organically through mutual

interests that can ideally develop into reciprocal mentoring relationships. However, not all

advisers are mentors, and the faculty member's degree of available time and interest in

working with an aspiring scholar can vary greatly from one individual to another. Due to

the more intimate relationship between graduate students and faculty, individual

personalities and how well they match become increasingly important. When a student and

faculty member match well as far as personality, it can mark the beginning of a mutually

beneficial relationship. However, when the match is less than desirable, it can leave a

student feeling isolated and unsure of where and how to obtain guidance in their program.

This is particularly problematic because it is not just the student-faculty relationship

within graduate programs that can become isolating for students, as the workload and

research demands on time can require students to immerse themselves within their

program and research spaces, often to the detriment of campus-wide engagement. This

lack of connection to campus can limit a student's knowledge of supportive networks and

resources and force them to seek support within departments that may not have an

infrastructure conducive to meeting the student's needs. While some students navigate

their graduate process successfully, it is clear that others do not. Sowell, Zhang, Redd, and

King (2008) reported that doctoral degree completion rates could be as low as 49.3% in the

humanities and as high as 63.6% in engineering fields within 10 years of starting their

doctoral degree. Furthermore, the attrition rates for members of underrepresented

minority groups are far higher than for Caucasians (Nettle & Millett, 2006). Given the low

completion rates for doctoral students, particularly URMs, it is vital for us to increase our understanding of the experiences of URMs who are pursuing graduate level degrees.

Lastly, the efforts to increase the participation of African American, American Indian, and Hispanics in higher education and research careers have existed for nearly 50 years. They have consisted of federal and institution based efforts that span over an entire academic year or in some cases only a summer. Many of these efforts focused on access to opportunities to conduct research as there has been a persistent need to increase URMs presence in the growing research career fields. While many educational opportunities programs (EOPS) have addressed the needs of undergraduate students, few have supported these students through their graduate level study. This limited access to graduate level EOPs has placed many graduate students in the position of navigating the graduate education process with little guidance. Thus, while some students complete their programs, program completion rates indicate that many are not and thus are undermining the programmatic efforts which occur prior to graduate education. Some scholars have investigated the concept of student persistence, but few have focused on students during graduate education thus leaving a gap in the knowledge.

Conclusion

In conclusion, as Stewart (1988) indicated increasing the participation of African American, American Indian, and Hispanic people in higher education and, by extension, in research careers requires the consideration of complex issues. To this point, I have offered background information that elucidates some of the economic social, political, academic, and psychological issues and activities related to increasing participation (Stewart, 1988). First, the U.S. is faced with a significant workforce challenges that must be addressed before the competitive advantage is lost. Second, while efforts to encourage greater participation of URMs in both higher education and research careers have existed for over

four decades, degree completion rates and subsequently participation in the careers of the emerging industries remain dismally low. Third, our understanding of how to counter low participation and completion rates and better serve URMs in particular at the graduate education level requires further investigation. Given that higher education and the career opportunities of the present and future are inextricably linked (Johnston & Packer, 1987; Judy & D'Amico, 1997; Malveaux, 2003), we must pursue increasing URM participation in both higher education and research careers with urgency.

In the remainder of this chapter, I provide an overview of two of the first university based summer research programs that intended to address the need for increased URM participation in graduate level education and research careers. These programs are the catalyst for the corresponding evaluation activities in this study, as well as provide the population from which the sample for the research activities is drawn. Additionally, I outline my guiding conceptual framework, and provide the statement of the problem, and present the study purpose, significance, and organization.

The Summer Pre-Graduate Research Experience (SPGRE) and the Moore Undergraduate Research Apprentice Program (MURAP)

Two of the early university based summer research programs were located at the University of North Carolina at Chapel Hill. Established in 1988, the Summer Pre-Graduate Research Experience (SPGRE) program represented one of the first university based undergraduate research programs in the country. Then in the following year, the Moore Undergraduate Research Apprentice Program (MURAP) was established as an extension of SPGRE. Initially SPGRE focused on student preparation for STEM research careers, but through collaboration with the Moore Undergraduate Research Apprentice Program (MURAP) and additional funding streams, participants have been able to conduct research in the areas of arts and humanities (A&H), as well as social, behavioral, and

economic (SBE) sciences. To date, the program has served over 800 students, with each cohort being drawn from a competitive national pool of applicants. During the period from 1997 to 2007, the combined programs averaged 45-60 participants annually with an average GPA of approximately 3.5 (i.e., B+; Lewis, 2007). These programs continued to serve prospective graduate students together through the year 2007, and for an additional year apart until the SPGRE program ended due to lack of funding, and only the MURAP program remained. Together these efforts sought to increase participation in graduate education and research careers through a combination of program components that included a meaningful research experience, academic and professional development, and cohort building activities. Additional details about these programs, as well as related evaluation and research, will be discussed in Chapter 2.

Overview of the Conceptual Framework

For this study, I integrated research on student persistence with that of social cognitive career theory (SCCT). First, the literature on student persistence was reviewed to identify factors that are known to either enhance or inhibit the participation and academic success of individuals of in the colleges setting. Because much of the student persistence research has focused on undergraduate populations, my literature review was limited to scholarship that included diverse populations. Additionally, with the limited research focused on graduate education, all identified literature was reviewed. The work of Tinto (1993) and his theory of doctoral student persistence provided a basis for understanding how the process of earning an advanced degree might occur for students, and how the stages, experiences, and actors might contribute to the process. This work, like Tinto's (1986) theory of student departure (undergraduate focused), has been the inspiration of much of the scholarship on both higher education contexts. Both models attend to characteristics of the educational experience that include individual characteristics and

dispositions, faculty, peers, institutional environment, communities, as well as learning expectations and experiences, which all can contribute as supports or barriers to academic persistence.

Next, I used the scholarship on social cognitive career theory (Lent, Brown, & Hackett, 1994) to determine the process of pursuing and choosing to enter a career field, in this case the broader domain of research science. SCCT provided a framework for understanding the mechanisms and the relationships between them as they contribute to the career decision making process. Lent, Brown, and Hackett (1994) posited that the career decision process is affected by a series of interrelated components and mechanisms which include personal inputs, background and proximal contextual influences; learning experiences; self-efficacy; outcome expectations; and interests, goals, and actions. By identifying these components and mechanisms and their connections, I was then able to locate the concepts and findings from the student persistence literature into an integrated conceptual framework for this investigation. SCCT was particularly well suited for this work given its grounding in Social Cognitive Theory (SCT; Bandura, 1986). Social Cognitive Theory posits that a triadic reciprocal relationship exists in the developmental process of an individual that is composed of personal, behavioral, and environmental factors. Each of the three factors of SCT draws from and informs the other in a continuous cycle. By utilizing SCT, Lent, Brown, and Hackett (1994) allowed for a comprehensive developmental model of how career decisions are made which fit nicely with the identified characteristics of student persistence to provide a lens for this study. Research from these two bodies of scholarship, and how they were integrated will be discussed further in Chapter 2.

Statement of the Problem

The US economy has increasing become focused on both technology and service industries, yet the available workers are not able to meet the demand for a more highly trained workforce (Expanding Underrepresented Minority Participation: America's Science and Technology Talent at the Crossroads, 2003). Additionally, the possibility of the US meeting the workforce demands of the future is compounded by a combination of demographical and educational challenges. Demographically, there has been a shift in the ethnic composition of the U.S. citizenry with African Americans, American Indians, and Hispanics collectively comprising an increasing percentage of the overall population. Educationally, the participation in higher education of members of those three minority groups has not matched their representation in the population and consequently each of these groups continues to be underrepresented in both graduate education and research career fields. Researchers have theorized as to the reasons for the lower participation rates of members of underrepresented groups in higher education, as well as the factors affecting student persistence in undergraduate and to a lesser degree graduate education. Moreover, even fewer studies have included samples inclusive of individuals from minority backgrounds. With these considerations, there is a need for increased understanding of the challenges faced by individuals from minority backgrounds during graduate education. Additionally, we must seek to understand how individuals counter these challenges, and what effect these challenges may have on their decision to enter research careers.

With the workforce becoming increasingly dependent on URMs, there is a need to continue program efforts that raise awareness and advance preparation for the careers of the present and future. Furthermore, without increased research efforts, it is likely that the participation and success of underrepresented minorities in higher education and research careers will not improve. Therefore, it is imperative that more research be

conducted with the purpose of elucidating the experiences and needs of these individuals

while they undertake the necessary academic preparation for high demand careers, as well

as contribute to the theory used to develop and enhance support programs.

Purpose of Study

The purpose of this study was twofold. First, I used an integrated framework

drawing on Social Cognitive Career Theory (SCCT), as well as literature on student

persistence, to assess the proximal experiences that influence former program participants'

decisions to enter research careers. In particular, I focused on contextual factors which

might present to former program participants as supports or barriers and how those factors

affect the process components of interests and goals. This approach allowed for not only the

exploration of previously identified factors, but also the potential identification of other

considerations offered by study participants.

Second, there are critical evaluation challenges facing educational opportunities

programs such as undergraduate summer research programs. Through this study, I was

able to capture critical data on the short and long-term educational and career decisions of

the former summer research interns. Findings associated with these data provide insight

related to the distal goal outcomes of the Summer Pre-Graduate Research Experience

(SPGRE) and Moore Undergraduate Research Apprentice Program (MURAP) programs.

There have been several models of undergraduate research programs established over the

last 40 years; the SPGRE and MURAP program models include a summer research

experience developed to help increase the participation of underrepresented minority

students in graduate education and research careers. Thus, the longitudinal outcomes

associated with these initiatives include (a) entrance into a graduate program, (b)

successful graduate school transition, (c) graduate school completion, and (d) entry into a

research career. During this study, I intend to accomplish the essential benchmarking of

these milestones while also investigating post program influences on each of these decisions.

For this study, I contacted the 131 African American former participants of the SPGRE and MURAP programs from the summers of 2004-2007. Using a combination of a short online survey and individual semi-structured interviews, I gathered longitudinal updates on post program educational choices and experiences along with their current views regarding supportive and challenging experiences in their graduate education process that influenced their perspective on career options. These results provided critical post SPGRE or MURAP program insight on the distal outcomes, and the factors that influenced the decisions made by the study participants.

For this study, two overarching research questions are used. The first research question guiding this study is "How do experiences related to graduate education and the components of Social Cognitive Career Theory help us to understand former undergraduate research intern choices of persistence towards Graduate Education completion?" The second overarching research questions is "How do experiences related to graduate education and the components of Social Cognitive Career Theory help us to understand the research career choices former undergraduate research interns?" Each of these overarching research questions have more specific sub-questions that help to better focus the study.

Summary

Currently, there is a deficiency of highly trained workers within the U.S. workforce that is placing the country at a competitive disadvantage. There are several factors contributing to this issue, as well as efforts to counter the problem. First, this deficiency is the result of a combination of shifting economies which require workers with higher levels of post-secondary education, and the shift in US demographics that is increasing comprised of individuals from ethnic backgrounds historically underrepresented in higher education

degree obtainment. Second, in an effort to address this underrepresentation, Educational

Opportunities Programs, including undergraduate research programs, have played an

important role in undergraduate student retention, as well as preparation for graduate

education. Additionally, the long-term goals of these programs are to increase in the

participation of individuals from underrepresented backgrounds in the knowledge-based

careers of research. However, these types of programs are not widely available during the

critical educational process of graduate education that completes the preparation for

entrance into research careers. Third, literature related to the experiences of

underrepresented graduate students and how those experiences may affect the decision to

enter research careers can be considered limited at best. This is of particular importance

given that the degree completion rates for graduate students at the doctoral level,

particularly those of underrepresented backgrounds, are lower than the 10 year average of

49% in some fields. Lastly, because of these various issues, this study seeks to integrate

literature on student persistence in higher education with a model for career decision-

making known as Social Cognitive Career Theory (SCCT). To this point, it appears that

there have been few studies utilizing this theory to understand the outcomes of EOPs, and I

have been unable to identify a single study that integrates student persistence literature

with SCCT in order to understand what may be happening during graduate education that

may affect the degree completion and subsequent choice of individuals to enter research

careers.

GLOSSARY

Arts and Humanities (A&H) refers to fields of study such as art, communication studies English and comparative literature, history, journalism, performing arts, and romance languages.

Educational Opportunities Programs (EOPs) are programs established for enhancing educational opportunities for individuals of first generation, low income, and underrepresented minority (see a definition below) backgrounds.

Hispanic Serving Institutions (HSIs) are institutions of higher education that have at least a 25% undergraduate fulltime enrollment of individuals of Hispanic ethnicities.

Historically, Black Colleges and Universities (HBCU) are institutions of higher education that were established prior to 1964 for serving the needs of Blacks in America.

Minority or Minorities (without the qualifier "underrepresented") refers to African American, American Indian, Asian American or Pacific Islander, Hispanic or Latino/a and, since the 2010 census, the classification of Multiracial collectively.

Minority Access to Research Careers (MARC) refers to a program funded by the National Institutes for Health intended to provide minority undergraduate students with the opportunity to gain research experience.

Minority Biomedical Research Support (MBRS) refers to a second program funded by the National Institutes for Health intended to provide minority undergraduate students with the opportunity to gain research experience.

Moore Undergraduate Research Apprentice Program (MURAP) is a summer undergraduate research program that provides 10 week research immersion opportunities in the domains of Arts and Humanities and the Social, Behavioral, and Economic sciences.

Science, Technology, Engineering and Mathematics (STEM) refer to the disciplines encompassed by the domains of the physical sciences, technological, engineering, and mathematics fields of study.

Social, Behavioral, and Economic Sciences (SBE) refer to fields such as economics, public policy, political science, psychology, and sociology, as well as interdisciplinary studies of similar fields.

Summer Pre-Graduate Research Experience (SPGRE) program is a summer undergraduate research program that provides 10 week research immersion opportunities in the domains of the Social, Behavioral and Economic sciences, and Science, Technology, Engineering, and Mathematics fields of study.

Traditionally White Institution (TWI; also known as a Predominately White Institution [PWI]) refers to colleges and universities that are attended primarily by individuals of Caucasian ethnicity.

Tribal Colleges and Universities (TCU) are institutions of higher education that are controlled and operated by American Indian tribes.

TRiO refers to an array of federal programs including Upward Bound (UB), Talent Search (TS), Student Support Services (SSS), and the Ronald E. McNair Scholars Program (referred to as McNair).

Underrepresented Minorities (URMs) are members of African American, American Indian, and Hispanic or Latino/a ethnic backgrounds.

CHAPTER 2: REVIEW OF LITERATURE

In this chapter, I review evaluation and research literature related to increasing the successful participation of underrepresented minorities in both graduate education and research careers. The purpose of this review is to develop an integrated lens for exploring participant perceptions of supports and barriers to their current academic and career goals during the graduate education process. Using literature on educational opportunities programs, student persistence in higher education, and Social Cognitive Career Theory (SCCT; Lent, Brown, & Hackett, 1994), I developed a conceptual framework for this investigation.

In the remainder of this chapter, I organize the evaluation and research literature into four sections: (a) A brief description of the steps taken to obtain the identified literature, (b) educational opportunities programs and increasing participation in research, (c) student persistence in higher education, and (d) social cognitive career theory. In the last section, I present research specific to SCCT research drawing on the theory, as well as situate my review findings from the student persistence literature within the model components.

Literature Search

An exhaustive search of various repositories of related literature was conducted via several resources including the, (a) American Educational Research Association (AERA) Digital Journals Collection (on CD), (b) Academic Search Premier, (c) Educational Resources Information Center (ERIC) Clearinghouse, (d) Google, (e) JStor, and (f)

PsychInfo. Utilizing the previously mentioned sources, the literature search was conducted in three phases.

Phase 1. Involved using combinations of broad keywords specific to the study in each of the resources listed above, allowed for the capture of as many references as possible. Variables such as ethnicity (i.e. African American, Black; American Indian, Native American; Hispanic, Latina, Latino; Underrepresented, and Minority) were used separately in conjunction with topical terms and phrases related to higher education (i.e. College, Graduate Education, Graduate School, Graduate Students, Higher Education, Undergraduate, and University); known intervention program titles and acronyms (i.e. Louis Stokes Alliance for Minority Participation (LS-AMP); Minority Access to Research Careers (MARC); Minority Biomedical Research Support (MBRS); and Ronald E. McNair Scholars Program (McNair)); and lastly terms related to the bodies of literature that were being used to develop the conceptual framework (i.e. social cognitive career theory, student persistence). For the purpose of phase one all returned reference abstracts were reviewed for appropriateness to the intended research as described in phase 2.

Phase 2. As keyword searches are not completely discriminate and may capture results outside of the desired scope of study, during Phase Two search results were narrowed by limiting literature to those studies that focused on undergraduate, graduate (master's and doctoral) years of study, or post-baccalaureate program alumni within and outside of present academic study.

My familiarity with this area of research and the associated theories allowed him to discern that within the context of higher education and restricted by the applied variables, there would be a limited amount of research available via peer-reviewed journals.

Moreover, as some search engines can return literature published outside of the peer-review process the amount of pertinent literature collected was limited to the following categories: books and book chapters; conference presentations; dissertations and theses; governmental and private foundation reports; and miscellaneous periodicals.

Phase 3. Lastly, as databases are continually being updated, and on occasion subject to subscription limitations (available periodicals, years available, etc.) multiple university library systems that were within close proximity or offered electronic public access were used including the University of North Carolina at Chapel Hill, North Carolina State University, and McGill University. Furthermore, additional references with which the author was familiar were included.

Educational Opportunities Programs and Increasing Participation in Research

Since the early 1970s, there has been an interest in increasing underrepresented minority opportunities for postsecondary education and career participation in the STEM fields. Recruitment and retention initiatives for promoting graduate education and research careers were first funded in 1972 with the advent of the Minority Biomedical Research Support (MBRS) program offered by the National Institute for Health (NIH) unit of the federal government (National Institute of General Medical Sciences – National Institutes for Health, n.d.). This initiative originally targeted undergraduate students at Historically Black Colleges and Universities (HBCU), Hispanic-serving institutions (HSI), and tribal colleges and universities (TCU) in order to expose them to the activity of scientific research and prepare them for more advanced education (Tyler, 1995). Since the establishment of the MBRS program, additional federal programs have been initiated for similar purposes, including (a) the Minority Access to Research Careers (NIH-MARC), (b) the Louis Stokes Alliance for Minority Participation (NSF-LSAMP), and (c) the Ronald E.

McNair Scholars Program[7]. These programs often consist of academic and personal developmental support as well as both research and professional development experiences. While programs like MARC, MBRS, LS-AMP, and McNair intend, in part, to prepare participants for future research activities (Grimmett, Bliss, Davis, & Ray, 1998), the opportunities for conducting research during these academic-year programs vary due to differences in both program structure and institutional resources. Because research capacity limits opportunities for students who attend non-research intensive institutions, students are encouraged to seek out opportunities at institutions with a greater capacity to accommodate a variety of research interests, usually over the summer months.

Unlike academic-year programs that may be limited by varying institutional infrastructure, summer research opportunities programs (SROPs)[8] are primarily based at large research institutions that are able to provide broad research options for aspiring undergraduate scholars (Tyler, 1995). A benefit of these experiences is that, during the summer, participants do not have to balance coursework and extracurricular activities, which allow for an immersive research experience. In addition to research immersion, summer program participants may receive academic and or professional development (e.g.,

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[7] Participants in the Ronald E. McNair Scholars Program sometimes refer to the program as simply McNair. Additionally, participants are often referred to as McNair Scholars.

[8] Summer research opportunities programs are referred to by various names and acronyms. For instance, the earliest programs often were referred to as research experience for undergraduates (REUs) programs, a term coined by the NSF in the 1980s, or SROPs as previously mentioned (Tyler, 1995). More recently, there has been a growing body of scholarship funded by NSF on summer programs that are referred to as structured undergraduate research experiences (SUREs; Strayhorn, n.d.; Strayhorn & Burt, n.d.). Lastly, Simpson (2003) and Lewis (2007) include such programs under the label of graduate school preparation programs (GSPPs), given the stated purpose of increasing participation in graduate education. From the variety of available terms, one thing is clear: there is no shortage of terms within the lexicon of educational opportunity programming. While reporting research in this review I will use the terms associated with the authors for the purpose of accuracy, but these terms should be considered to be included within the somewhat broader term of educational opportunities programs (EOPs) that I am using throughout this study.

course refreshers, preparing for the graduate school application process, GRE preparation, and presentation/public speaking skills) during the course of their programs. The program components of research and individual development (i.e., academic, pre professional) can vary across programs as well as the duration, size, and to some degree scope (Daniels, 1995; Lewis, 2007).

Regardless of program type (i.e., year round or summer), all of these programs target undergraduate students with the intent to provide greater exposure to the research context. Frierson and Zulli (1998), who reported on an academic year program and its summer research component, stated, "The RES (Research Education Support) program at UNC-CH plays an important role in expanding opportunity through success in encouraging minority undergraduate students participation in high-quality scientific research experiences" (p. 10). Such activities are intended to lead to several potential outcomes: (a) increasing familiarity with the research process and graduate school context, (b) encouraging student's continuation to graduate level study, preferably at the doctoral level, and (c) fostering interest and entrance into research as a career (Frierson, 1998; Jay, Eatmon & Frierson, 2005). These goals align well with the findings of Grimmett et al. (1998), in which three highly rated attributes of a research program they investigated were (a) learning experience, (b) supporting one's intellectual curiosity, and (c) the chance to work with others interested in academic achievement (p. 412). In using undergraduate research programs to encourage future participation in graduate education and research careers, the administrators of these programs rely on participants being able to gain exposure to the research process, foster strong relationships with faculty, and better understand what will be required for future academic and career success.

While the reasons educational opportunities programs exist is well documented, the evaluation and research of these programs has been hindered by several challenges (e.g.,

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limited funding, small program sizes, variability in structure, goals, and service; Hallock, 2003; Kezar, 2001). The dearth of available information presents both problems and opportunities. Current funding trends require greater accountability (Grimmett et al.,1998; NSF, 2000); programs must be able to justify their costs with measurable evidence of program value and impact (worth) while often lacking the necessary data to do so (Melvin, 2006). Thus researchers with an interest in the mission of EOPs have an opportunity to make vital contributions through both evaluation and research. For researchers who have taken up this challenge, there are interesting and promising findings. For example, evaluators and researchers of EOPs have documented program impact related to academic efficacy (Farro, 2009; Williams, 2005); academic and career aspirations, and persistence (Farro, 2009; Frierson, 1996, 2006; Hallock, 2003; Hamilton, 1998; Lewis, 2007; May, 1997); mentorship and program satisfaction (Booker & Frierson, 2002; Frierson, 1996; Greene, 2007; Grimmett et al., 1998; Jay, Eatmon, and Frierson, 2005); race and gender effects (Frierson, Hargrove, & Lewis, 1994; Riggins & Frierson, 1996; Strayhorn, n.d.; Strayhorn & Burt, n.d.); and socialization (Davis, 2005).

Given the purpose of EOPs to enhance participants academic, skill, and professional preparation for advanced education and the participants entry into research careers (in the case of research programs), it is important to understand how programs affect student learning and subsequently both their academic and research efficacy.

Academic and Research Career Efficacy

Few studies have focused on the learning outcomes of EOPs and program satisfaction (Strayhorn & Burt, n.d.). While conducting this review, a few studies were identified that reported on learning outcomes. First, when reporting on former participants of three SURE programs based at major research universities, Strayhorn and Burt (n.d.) indicated that Black students indicated that their experience provided them an increased

understanding of the research process, particularly on the topic of ethical conduct in research. In a different study, Reid (2009) found participants reported that the program increased their understanding of research alternatives to medical school and increased student confidence in being able to conduct that research.

In a study that had as slightly different focus, Farro (2009) looked at the efficacy of participants of a year round McNair program. While research is a component of the McNair programs, factors such as academic skill, test-taking, test anxiety, and creativity were the focus of this investigation. Across two time intervals, Farro (2009) reported that women in the program harbored lower self-perceptions at the first interval (i.e., entrance into the program) on each of the factors mentioned in comparison to men. By the second time interval (i.e., end of the program year), the perceptions of the women participants had increased to a level similar to their male counterparts.

Mentorship and Program Satisfaction

A key component of EOPs is to provide participants with access to faculty with the potential for mentorship. Quality interactions with faculty can enhance programmatic experiences and model the types of relationships that will be important during graduate education. Frierson (1996) investigated aspects of the program and mentor satisfaction with participants of the SPGRE program. He found 90% of the 207 former participants indicated that their relationship with faculty in the program was at least favorable, with most (83%) indicating very favorable rating. Additionally, 81% of the participants indicated that they minimally agreed, with some strongly agreeing, that their relationships with their mentors were productive during the program.

A second study involving the SPGRE program looked at whether the ethnicity or gender of mentors affected relationships and program satisfaction. Frierson, Hargrove, and Lewis (1994) reported the underrepresented minorities (URMs) who worked with either

Black or female mentors indicated a significant difference in positive interactions over those who did not during their summer research experience.

Lastly, Davis (2005) provided a perspective on problematic factors during program participation as it relates to mentoring. Program participant reported that quality mentorship was undermined by factors such as (a) a lack of communication and rapport, (b) a lack of commitment or time on the part of the faculty mentor, (c) differing work styles, (d) personality conflicts, and (e) stereotype threat.

Academic and Research Career Aspirations

For many of the EOPs described in this chapter, the intermediate (i.e., participation in graduate education) and distal (i.e., entrance into research careers) outcomes are well stated. Unfortunately, the research on the positive effects of EOPs on these goals is limited (Hallock, 2003; Pender, Marcotte, Sto, & Malton, 2010). In an effort to understand how programs affect the participants' future plans, several researchers have reported on both academic and career aspirations. For example, Frierson (1996) reported that 71% of former SPGRE program participants either strongly agreed or agreed that the program increased their interest in pursuing a graduate degree, and 55% indicated that the program stimulated their interest in pursuing a research career. In a separate study, Booker and Frierson (2002) looked at the responses of 96 program participants across the humanities, science, and social science fields from the summers of 2000 and 2001. In this study, 81% of the program participants indicated that they had a better understanding of what graduate study entailed (Booker & Frierson, 2002). Lastly, as it relates to studies conducted on this program, Lewis and Frierson (2006) conducted an extension of the previous studies to include participants from 1998-2005. Their finding indicated that 84% of the former 243 interns included planned to enroll in graduate education, a 29% increase over the 1996 study.

Similar aspirations to continue education were reported in a longitudinal evaluation of the Georgia-Tech Summer Undergraduate Program of Research in Electrical Engineering for Minorities (GT-SUPREEM). May (1997) reported that of the 35 program alumni who participated in the study, 71% either agreed or strongly agreed that their participation in the program contributed to their decision to attend graduate school. Moreover, 35% of them indicated that their research during the program was closely aligned with their research in graduate school. However, a follow-up study indicated a key finding that has program accountability implications: only 36% of the alumni had entered graduate programs at the time of the follow-up, and 47% were planning to enter within two years (May, 1997). While that finding represented a promising collective sum of 80% who indicated they would complete graduate level study which programs could claim as promising, 47% were still at risk of not doing so as they were taking time off between undergraduate and graduate education.

 Next, Reid (2009) looked at African American women who participated in a 10-week undergraduate research experience (URE) in Atlanta, GA. Participants of the program indicated an increased affinity for science and a likelihood that regardless of future career outcomes science would play a role in the work. While the program experience appeared to be positive given the increased interest reported, one student's experience was mixed. An intern reported that her experience confirmed for her that she did not want to do neuroscience research in the future, but she did see a future in research and planned to explore other options.

Pender et al., (2010) conducted research on the Meyerhoff Scholars program at the University of Maryland Baltimore County, specifically between research experience and matriculation into Ph.D. programs. First, program participation had positive effects on Ph.D. participation in STEM. Additionally, students who had multiple research

experiences had an increased likelihood of persisting to doctoral level study. They believed this is true because of the frequency which results in increased time associated with the activity. Lastly, the researchers reported that there was a slightly higher rate of entry into Ph.D. programs for students who participated later in their undergraduate career, especially after senior year.

The last study that reported on academic and career aspirations provided an interesting finding as it related to summer research programs. Strayhorn and Burt (n.d.) reported that while program participation did not seem to increase interest among participants, it did help to sustain the preexisting graduate school aspirations of Black students.

These findings regarding not only graduate education and research career aspirations, but also doctoral degree completion are promising and should invoke optimism that programs can either inspire or sustain interest and persistence towards research careers. Yet, it is important to remember that there is still limited research available and more research to document outcomes is needed.

Race and Gender

In addition to the findings previously discussed that took into consideration ethnicity or gender, Strayhorn and Burt (n.d) noted that while Black students who participate in SURE programs indicated learning gains from their research program participation, there was a difference between men and women. In his study, Black women more frequently reported higher learning gains than men did across eight learning outcomes.

Socialization

When considering EOPs, socialization involves the exposure and acclimation of program participants to both the undergraduate and graduate education cultures. Both

year round and summer programs are able to provide students access to faculty via research opportunities that allow them to experience the process of conducting research and its components. Key activities such as formulating questions, reviewing related extant literature, designing and carrying out investigations, and writing and presenting findings are critical to the research process. Through observation and interaction with faculty, graduate students, and peer researchers, students learn how to carry out these activities as well as about expectations and values associated with being a scholar.

Hallock (2003) discussed the aspect of the socialization process related to peer influences. In the study of both an Alliance for Graduate Education and the Professoriate (AGEP) and a McNair scholars program, participants indicated that they utilized their peers to develop skills that would support success in graduate school, as well as form networks of support for future success. For example, the researcher reported that students clearly valued the relationships they established with their peers as they planned to keep in contact others from the program once their time ended (Hallock, 2003).

Socialization can include becoming acclimated to a new environment. Thus, an additional benefit of summer research programs is captured in the work of Jay, Eatmon, and Frierson (2005). These researchers, while reporting on the SPGRE program, indicated that there was a majority of former program participants who attended a Historically Black College or University (HBCU) as undergraduates, which have institutional environments very different from the Primarily White Institution (PWI)[9] that housed the program. These former program participants reported that their summer experience assisted in their

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[9] The term Primarily White Institutions (PWIs) will be used to reference colleges and universities that are comprised of a majority of individuals from the racial category of "White" without meeting the criteria of Hispanic Serving Institutions previously discussed. Additionally, the acronym "TWI" is used in related research to refer to the same group of institutions but to reference the term Traditionally White Institutions. Lastly, both of these terms are also equivalent to the term Historically White Institutions (HWIs) which also appears in related literature.

transition to PWIs for graduate school. More specifically, respondents reported that due to their summer program experience at The University of North Carolina at Chapel Hill, their comfort level with the environment and familiarity with campus resources contributed to them not experiencing "culture shock" when transitioning from their undergraduate institution into graduate education (p. 209).

As can be seen by this review of findings from EOPs evaluation and research including summer research programs, there are clear benefits for members of underrepresented groups to participate in such programs. May and Chubin (2003) offered the following words in support of these opportunities: "One of the most effective approaches for motivating students to pursue advanced degrees and research careers in science and engineering is a fruitful research experience as an undergraduate" (p. 9). These findings offer some insight into undergraduate student persistence, as well as graduate education and research career aspirations as they relate to EOPs. Yet, there is still much to understand about how URMs experience collegiate education and make their decisions to persist towards potential entry into the technical and knowledge based careers that are in growing demand.

Summary

Educational opportunities programs (EOPs), including summer research opportunities programs (SROPs), have existed for over 40 years. These programs first began as federal initiatives before being established at colleges and universities. While there has been limited research and evaluation conducted on these programs, what has been reported has been positive. Through these programs students are able to develop closer relationships with faculty in comparison to their peers who do not participate in similar initiatives. These programs provide exposure to personal, academic, research, and professional development opportunities and support which are believed to strengthen the

students' preparation and efficacy for subsequent education and, for research focused

programs, entrance into research careers. While these outcomes are positive as well as the

development of networks of support and collaboration among peers and incumbent faculty

mentors, there is still a need for more research and evaluation activities to support the

perpetuation of these programs. With greater levels of accountability as it relates to

program outcomes, and shrinking funding resources, it is imperative that programs be able

to justify their efforts. However, the road to creating young scholars and future researchers

does not end with these programs, and the distal outcomes that they are expected to affect

(i.e., entrance into research careers) can be greatly affected by post program experiences in

which similar support programs are few. In the next section, aspects of the higher

education process will be discussed that are known to affect student persistence and can

also support or derail aspirations for entering research careers for former program

participants.

Student Persistence in Higher Education

Undergraduate Education

For students, the undergraduate college experience can be filled with academic and

social challenges. These challenges are especially true for individuals from

underrepresented minority backgrounds. Over the last 40 years, researchers have sought

to understand how students persist in higher education settings, but much of this work has

focused on the undergraduate context. One of the early scholars, and arguably the most

influential as it relates to the line of student persistence inquiry, is Vincent Tinto (1975,

1987, 1993) who developed a theory of student departure. He posited that there were three

stages of integration into one's higher education community, all of which linked persistence

to both environmental and individual developmental factors affecting how a student

experienced their respective institution (Brower, 1992; Swail, Red, & Perna, 2003; see figure 1).

Figure 1: Tinto's longitudinal model of institutional departure (Undergraduate)
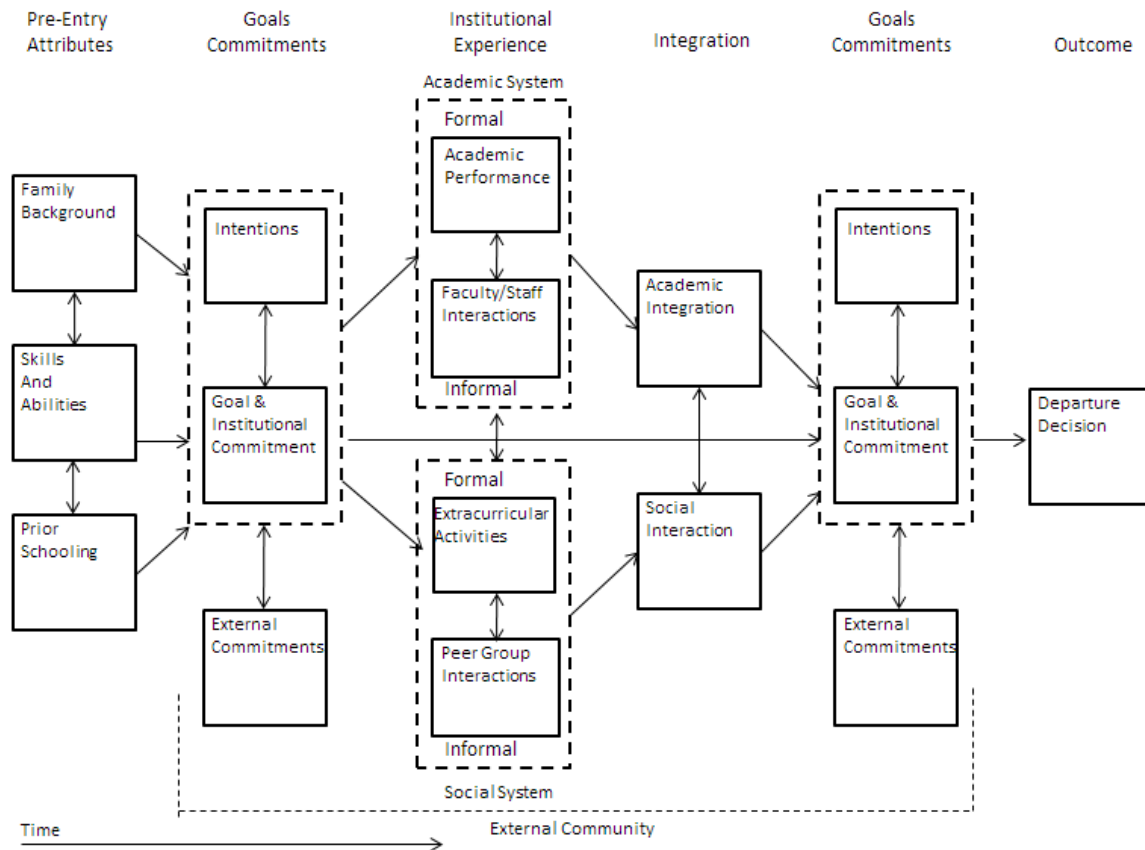
Figure 1. Recreation of "Figure 4.1. A longitudinal model of institutional departure" from "Leaving College" (Vincent Tinto 1993, p. 114)

The first stage of his theory, separation, required the student to remove themselves from their community of origin, bringing with them their personal attributes (i.e., family background, skills, and education) and goals, and with the expectation of immersing themselves in the new institutional community. Whereas, the second (transition) and third (integration) stages of the theory focused on the student's engaging with various communities, their recognition of the social norms and values, and, finally, their

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willingness to assimilate. Influenced by Durkheim's (1958) theory of suicide, which claimed that individuals who entered a new community and did not appropriately transition or assimilate would use suicide as a means of ending the process, Tinto (1993) posited that a new student would commit a form of academic suicide by either withdrawing (i.e., behaviorally) or dropping out from their academic endeavors if they did not properly transition into their collegiate environment. Conversely, students who acclimated to the academic and social norms of the environment, developed close relationships with faculty and peers, and aligned themselves with their new community would have a greater likelihood of persistence (Tinto, 1987).

Critiques of Tinto's original theory, which spurred revision, pointed to his exclusive attention to the effects of the internal institutional environment and not how external communities (i.e., family, peers, and other social communities) could influence student persistence (Cabrera, Castandeda, Nora, & Hengstler, 1992; Swail et al., 2003). The first stage of his theory, separation, required a student to shed their connections to other communities and cohere to their new one, thus ignoring the potential effects of family and former peers. Unlike Tinto, for other researchers, separation did not seem realistic nor beneficial for the young person. Cabrera, Nora, Terenzini, Pascarella, and Hagerdon (1999) found no support for the assertion that disengagement from "family, friends, and past communities" was a precondition for successful transition to the collegiate environment (p. 152). Additionally, other views and criticisms included the lack of attention to the financial needs and responsibilities of students (Caberera, Nora & Castandeda, 1992), and the lack of appropriateness of the theory to non-residential institutions and to non-traditional students (e.g. commuter, older, parents, working; Bean & Metzner, 1985; Rovai, 2002). Each of these criticisms has relevance in graduate education.

Graduate Education

Along with work on undergraduate student persistence, Tinto (1993) also offered a model for doctoral student persistence, which he posited as being similar to the preceding level of higher education but with some distinct differences. For the doctoral level, his focus remained on the personal and intellectual interactions between individuals, faculty, and communities, but he acknowledged that the relationships would be much more localized to the departmental level given the degree of socialization that occurred to one's field. The need and expectation for a more intimate interaction at the departmental level changed the nature of involvement for the student throughout the institution and, therefore, Tinto did not view separate internal communities (i.e., undergraduates) for doctoral students, but nested communities exerting greater influence throughout the spaces. Overall, the model for doctoral persistence remained a longitudinal model, with three stages as found in the undergraduate model. The similarities maintained attention to the student entry characteristics and dispositions (e.g., personal attributes, goals, commitments); second, the now nested internal communities, which would inform the student as to social norms and expectations; and third, integration which still required assimilation, but included key milestones of the doctoral process (i.e., reaching candidacy, conducting research). Interestingly, this model, which was offered at the same time of his theory of integration, addressed one of the significant issues (i.e., financial resources and assistance) for which the undergraduate model was criticized (see figure 2).

Figure 2: Tinto's Longitudinal Model of Doctoral Persistence
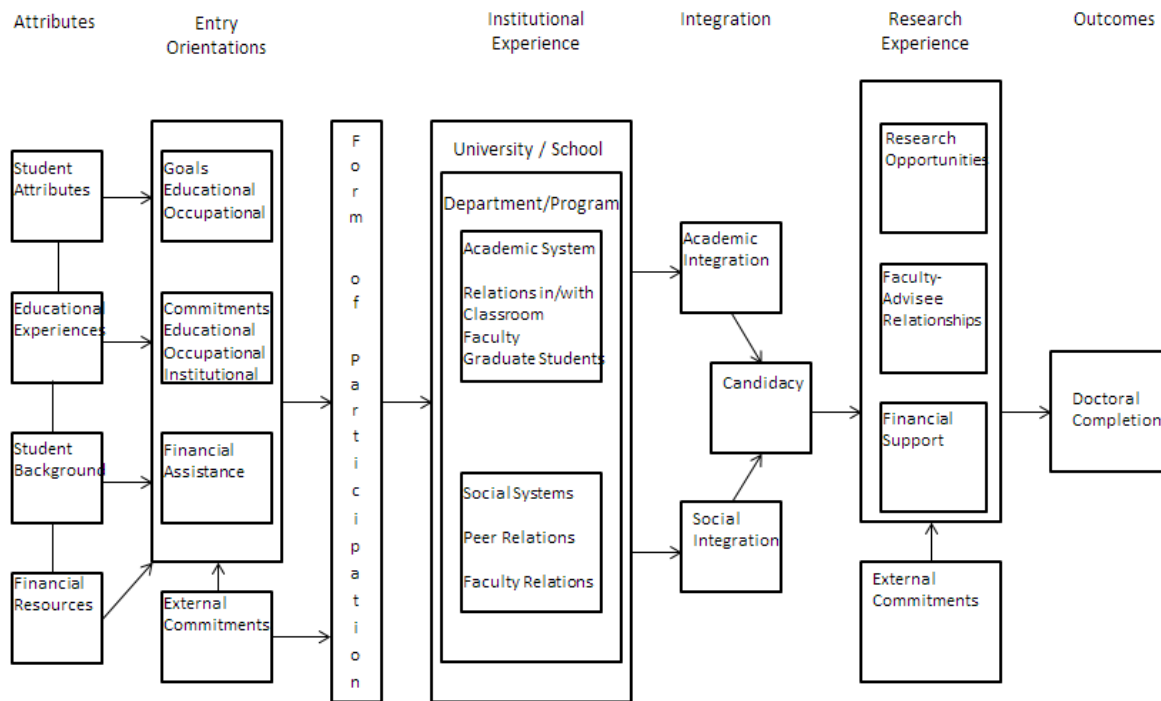
Figure 2. Recreation of "Figure B.1. A longitudinal model of doctoral persistence" from "Leaving College" (Vincent Tinto 1993, p. 240)

As can be seen from the model, there are distinct stages, as with the undergraduate theory, but notable differences in the stage labels, components, and structure. Using the two models for undergraduate and doctoral students as a framework, I identified several categories that would most likely represent all types of graduate students around which to organize this review of graduate persistence literature. These categories are (a) student background, (b) faculty-student relationships, (c) peers, (d) family, (e) environment, and (f) external communities.

Student background. When considering the challenges of graduate education success, the individual student is the most differentiating variable in understanding the complex learning experience. Students matriculate into and through programs bringing

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with them varying socioeconomic backgrounds, degrees of experience and preparedness, and personal responsibilities. Additionally, the student's ability to marshal relationships that support both personal and academic endeavors, while critical for success, may not always be without challenges. These variables that can influence a student's success will be discussed next.

Socioeconomic background. An individual's socioeconomic background represents a complex collection of variables. As it relates to the current context of graduate school, a few variables stand out as key considerations. An individual's race, gender, and class play a role in their educational experiences and potentially affect academic outcomes. Unfortunately for individuals of historically minority backgrounds, stereotypes related to ability begin at early stages in life and persist well into adulthood. Steele (1992) spoke of racial devaluation in which individuals from underrepresented backgrounds can be perceived to be present at institutions only under, for instance, the guise of affirmative action efforts. Carroll (1998), who referenced Steele's work, stated that some faculty at major research institution in California would argue that African American students would not do well at their institution because they were not well prepared or were less qualified.

However, the devaluation is not limited to race as more recently, the president of Harvard University commented that the underrepresentation of female scientists may stem in part from an 'innate' difference between men and women (The Harvard Crimson, 2005). This critical statement contributed to a long standing belief that women were not capable of engaging in science.

Additionally, issues related to class status also contribute to educational engagement challenges. For instance, minorities who already represent an underrepresented presence in undergraduate education can find themselves faced with a confounding decision when considering the advanced level of graduate education (Tinto,

1993). For these individuals and their families, especially when a first generation[10] college student is involved, determining the value of delaying potential earnings for additional education can be a difficult decision. The financial resources, if limited, of the family unit can present challenges to the decision-making process. Additionally, college-educated individuals may be expected to provide for aging parents and siblings in their family of origin or an immediate family unit comprised of a spouse and or children. Ultimately, without the cultural capital that accompanies participation in college education, the lack of understanding of how to finance graduate education and the potential return on investment can remain elusive for many potential students (Caberera, Nora, & Castandeda, 1992; Malcom & Dowd, 2012).

Academic Preparation. An individual's academic preparedness can have a significant bearing on graduate education. Prior educational institution type and access to supplemental educational opportunities programs can affect a student's preparedness for graduate education. The variety of institution types such as PWI teaching and research institutions, as well as those primarily serving specific populations such as Historically Black Colleges and Universities (HBCUs), Hispanic Serving Institutions (HSIs), and Tribal Colleges and Universities (TCUs), contribute to differences in student preparedness. The variance across the various institutional types can include school mission, infrastructure, and pedagogy which all contribute to how students are educated and trained. Regardless, while sometimes lacking in resources, some of these minority-serving institutions have been shown to foster greater levels of self-efficacy in regard to academics and career goals. With the varied institutional types, resources, and opportunities, it is necessary to

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[10] There is not a universal definition for the term "first generation" when referring to college students. For this study, the term "first-generation" refers to individuals whose parents may have completed their education through the high school level, but if so have not completed a college degree.

acknowledge the potential differences in prior educational experiences when investigating

graduate education engagement and persistence.

Timing of entry into graduate education. First, work experience is not a prerequisite

for all graduate programs especially in the STEM fields. This, along with an increasing

awareness of graduate education opportunities, has resulted in growing numbers of

students entering graduate degree programs immediately upon completion of their

undergraduate education. This phenomenon can present intriguing challenges during the

graduate education process as students may not enter programs with the focus, experience,

and maturity of students encountered by faculty in previous decades. With the exception of

some undergraduate students who have delayed entry into their first degree and thus are

possessing work experience, many college students complete their undergraduate programs

and enter graduate school in their 20s (Bean & Metzner, 1985; Rovai, 2002). Interestingly,

this age range has been identified as falling within the developmental period of emerging

adulthood (Arnett, 2000). Emerging adulthood, while not a fixed development process, is

posited as occurring between the ages of 18 and 29. Moreover, this developmental process

is marked by individual characteristics that can complicate graduate education engagement

such as the desire to view life experiences as opportunities for exploration, and

consequently exhibiting indecisiveness that can be perceived as a lack of commitment.

While these individuals may encounter challenges related to their limited experience and

maturity, it is probable that they will not have to deal with some of those more associated

with delayed entry.

Second, delayed entry students represent individuals who have chosen to enter

graduate education a year or more after completing their undergraduate education. While

those who take less than a few years before starting may not experience the transition to

graduate school much differently than those entering immediately, others who take an

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extended break between degrees have an increased likelihood of having personal, spousal, and family responsibilities that can create increased time and financial challenges to graduate education participation and engagement (Tinto, 1993). Moreover, some of these individuals may delay entry into graduate programs to a point where age differences, along with the additional non-academic responsibilities, may create challenges to engagement in the collaborative culture of graduate education. Although the National Center of Educational Statistics indicated the average age of graduate students was 33 between the years of 1993 and 2000, the age of the graduate student increased in the past few years with almost 33 % of students being over the age of 40 (Feinberg, 2006).

Faculty-student relations. Faculty members are integral to the graduate education process. During this process, faculty not only deliver the direct curriculum content, but they also act as role models for aspiring scholars fostering their transition into the institutional, departmental, and professional preparation for future careers (Felder, 2010; Golde, 1998; Mwenda. 2010). Moreover, faculty hold the position of power during the transition from the student-teacher to a more collegial relationships, and they are gatekeepers in the socialization process of students to their respective professional communities. As it pertains to minority students, the issue of faculty role models is not without controversy. The controversy involves the topic of same race and/or gender faculty representation in the academy and the need for similar role-models for underrepresented students. By acknowledging, the underrepresentation of minority faculty in higher education and the greater number of minority students who matriculate through graduate school, it is apparent that same race or gender matches are not required for the successful completion of graduate school (Anderson-Thomkins, Gasman, Gerstl-Pepin, Hathaway, & Rasheed, 2004). Regardless of this logical observation, the potential quality of the faculty-student relationships and, ultimately, preparedness for careers that are in question. It has

been reported that same-race or -gender matches between faculty and students can enhance the graduate experience and persistence to degree completion. Moreover, it is posited that these relationships can potentially increase the likelihood of similar career choice by students (Austin, 2002; Davidson & Fosters-Johnson, 2013; Riggins & Frierson, 1996). In part, these findings are tied to minority faculty possessing insight as to how to successfully navigate graduate programs and entry into professional communities while tending to factors related to their minority status. Although the opportunity for the same race and or gender faculty to student matching may or may not be necessary, minority students need to believe they have equal access to and support from their program faculty (Felder, 2010; Hamilton, 1998). During graduate education, especially at the doctoral level, the close bonds developed between faculty and students are critical to the transition from simply a faculty-student relationship to that of the collegial relationship of scholars. Additionally, the quality of the collegial relationship can potentially affect the degree to which a faculty member chooses to provide a student with the necessary socialization to norms and expectations of both the academic and professional networks associated with their developing expertise (Mwenda, 2010). If minority students do not have access to role models, they will not have the opportunity to develop collegial relationships with faculty and receive proper socialization to the associated networks of their chosen discipline. Thus, it can be anticipated that they will experience difficulties both during academic training, as well as entrance into professional careers (Gardner, 2007; Golde, 1998).

Professional preparation. The preparation of students for their professional life after graduate degree completion is a necessary but sometimes incomplete aspect of graduate education. For careers in research, compared to practitioner careers, this process can be even more elusive as the skills required for successful professional transition are either assumed to develop informally during graduate education. For instance, whereas

opportunities like assistantships may provide students with a chance to be exposed to research activities, they are often set up more to meet the needs of existing faculty than to provide comprehensive learning experiences (Austin, 2002). Thus, if not intentionally attended to by incumbents, such skills may be left to be honed after the graduate education process has ended. Williams (2004) stated that the critical activity of faculty mentorship provides an opportunity for students to become integrated into their profession, as well as the development of key competencies. Yet, many students of color do not benefit from adequate mentoring. The lack of comprehensive and deliberate transference of all required values, norms, expectations, and skills can be problematic as an individual's efficacy related to perceived requirements of, for instance, research careers can affect their desire to choose and engage in such careers. For the aspiring faculty researchers, critical skills such as teaching, mentoring, scholarly writing, and grant writing are known expectations. Additionally, the ability to build networks and identify potential collaborators is also essential when considering how individuals transition into a chosen field of work (Austin, 2002). The development of effective writing skills often is not part of the formal education process for many graduate level programs, but merely an activity associated with program requirements. These skills are developed through the preparation of papers for courses, professional conference, and scholarly collaboration usually with faculty or the utilization of writing development resources if available. For students, the initial opportunity of coursework is available to all students, but the more formal development of the latter two skills can be limited to students who have established strong relationships with faculty and thus are presented with opportunities. Regardless of the temporal opportunity to build connections, if students are not able to establish relationships among faculty the conveyance of cultural capital and the development of professional skills which are critical for entering research careers may be inhibited unless one is resourceful.

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Peers. Peers represent a source of personal, academic, and professional companionship that can be critical to the overall success in the graduate education process (Boulder, 2010; Hamilton, 1998; Patterson-Stewart, Ritchie, & Sanders, 1997). When interactions with peers are not optimal, students, especially minority students, may find themselves feeling isolated (Bonilla, Pickron, & Tatum, 1994; Hamilton, 1998). Hamilton (1998) noted that while White students rated peer support as a significant factor in program success, Black students more often referenced individual characteristics, such as internal fortitude, thus forgoing reliance on others. The feelings of isolation were believed to be in part due to a desire to connect with peers of the same background, who were not available within respective programs. To combat feelings of isolation, students from URM backgrounds may choose to connect with cultural organizations as a source of connection (Stanley, 1994). While the need to connect with similar people is an important part of feeling included in higher education, for students who do so exclusively it may cause them to be unnecessarily marginalized. For instance, Black students have reported having white peers with whom they interacted during graduate education and that on occasion those peers were able to sympathize with racial experiences of the Black students (Barker, 2007; Patterson-Stewart et al., 1997). At times, the opportunities for cross-racial support may be difficult to perceive for Black or any URM when individuals can and choose to sympathize or support are not around, and thus reifying feelings of isolation occur. An example of a common situation faced by URMs in higher education, which promotes feelings of isolation, is the expectation to 'represent' one's race or gender in conversations and class discussion (Cook, 2010; Rios, 2010). When minority students find themselves as the only or one of few members of their respective groups within a program, they can be faced with the unrealistic expectation of being the spokesperson on all topics identified with their background. When this occurs, the experience can be very isolating and stressful (Carroll, 1998).

The ability to engage peers in academic discussions, study groups, projects, and scholarship are vital parts of the graduate experience that support student engagement. Furthermore, the ability to connect with peers of all backgrounds, given the increasing diversity within society and higher education, warrants further investigation.

Family. For some, family can be the foundation of support in life. Yet, in the case of the first generation college students and URMs at both the undergraduate and graduate levels, this resource may not be able to provide needed support. Boulder (2010), while investigating the effects of family on doctoral students, reported that 81% (114 out of 141) participants indicated that the family was a significant source of support for them. Additionally, it has been reported the lack of apparent support from family, in particular spouses, had a negative effect on the persistence of women (Baird, 1990; Hamilton, 1998; Stage & Maple, 1996). While moral support can always be provided by family, for some like those of first generation college families, the lack of the shared lived experience that would help convey an understanding of the cultural norms of higher education will be absent. Additionally, given the limited understanding of the demands of higher education, family members may place expectations on students that can be counter to the culture of higher education and detrimental to student success. Conversely, for those students who may have family members who have engaged in higher education, and possibly at the graduate level education, the opportunity for knowledgeable support when navigating the process of higher education can be enhanced. It is critical to understand how family support and expectations across the varying degrees of familiarity with higher education affect graduate student persistence and success.

Environment. In the Tinto model, environment is comprised of several spatial components (i.e., university, department, or program). However, as previously mentioned a criticism of his model was that it did not include the community that is external to the

university and its possible effects on student persistence. In this section, I discuss literature related to the environmental factors of the larger university, departmental/program, and external community contexts.

University. The university as a whole represents that macro level of community in the academy. Each institution has its own set of cultures that can either permeate the entire community or be experienced in more specific ways through departments, programs, lab and research groups, etc. For underrepresented minorities, the environment at PWIs can be covertly and overtly hostile (Williams, 2004). Thus, how students experience this space can greatly affect student persistence. The current anti-affirmative action climate in the U.S. has resulted in some underrepresented students being turned away from institutions considered among the countries elite due to policy shifts and laws (e.g., Proposition 209 in California, U.S. Supreme Court decision on the University of Michigan admissions policies) being established that cause the institutions to appear less accepting of diverse individuals (Crockett, 2004). While Crockett's point more so focuses on undergraduates, it more than likely extends to diverse graduate students, and even though students may not be able to avoid attending PWIs given the research opportunities, it does mean that those students who do attend will have to navigate a difficult climate. The challenge of being potentially viewed as an affirmative action admit, and subsequently less qualified, is a common issue faced by underrepresented students. These types of issues, as well as those that can arise more specifically within ones program can represent significant obstacles to student persistence, however these issues can be countered through effective engagement with students.

Departmental/Program. While the overall university environment, or climate, can influence satisfaction and ultimately persistence of graduate students, much more time is spent within their programmatic environment. Solem, Lee, and Schlemper (2009) found

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that Students were more likely to complete their graduate studies when engaged in departmental activities such as colloquia, retreats, guest seminars, and social gatherings (CGS, 2003 as cited by Solem, Lee, & Schlemper, 2009; Nerad & Miller, 1996 as cited by Solem, Lee, & Schlemper, 2009). However, they went on to state that across the departments investigated, women, minorities, and international students reported the greatest amounts of social isolation (p. 288). This latter issue of feeling isolated makes it difficult for students to remain engaged in their academic pursuits and can contribute to attrition. These feelings of isolation can stem from experiences that cause students to question whether they are being valued in their program. Anderson-Thompkins et al. (2004) reported on the devaluation of aspiring African American graduate students in which students indicated not feeling viewed as "worthwhile and valuable contributors" to their doctoral programs and, thus, felt excluded (p. 233). Similarly, Williamson and Fenske (1998) stated that when investigating the experiences of American Indian, and Mexican American graduate students, the quality of interactions and perceived challenges can affect their incorporation into the academic system either negatively or positively. Furthermore, Valadez (1998) reported that when students felt that they were in an environment that promoted collaboration and was accepting of their ideas that they viewed their environment more positively.

External community. As previously stated, Tinto was criticized for only focusing on the campus environment and not acknowledging that students did not only interact within the boundaries of their respective institution. Student engagement with communities adjacent to their institutions is inevitable, but to what degree they engage will vary across individuals. For some it may be limited to commerce and recreation, whereas for others it can involve connections to organizations, professional networks, and people from diverse

demographics (e.g., class, gender, and race) that are limited or not available within their institutional environment.

Summary

There has been considerable research conducted regarding minority participation in higher education, yet much of the work has focused on the undergraduate years of study. Despite the paucity of literature on the graduate education context that exists, there have been contributions both theorized and empirical that offer insight into how student development and preparation might be enhanced for entrance into research careers. Yet, there is still much to learn. Gaining further insight into factors arising during graduate education such as student interactions with faculty and peers, family, professional and professional networks, as well as environmental and personal background are vital to increasing URM participation in research careers. In pursuing these insights, it is necessary to have a theory to guide the research. In the next section, the Social Cognitive Career Theory (Lent, Brown, and Hackett, 1994) will be explained. In addition to this explanation, student persistence literature will be situated in the model in order to provide an integrated presentation of the guiding theoretical framework used for this study.

Theoretical Framework: Social Cognitive Career Theory (SCCT)

Lent et al. (1994), the authors of Social Cognitive Career Theory (SCCT), proposed a model (see Figure 3 in which they posited that career development occurs across three main constructs which require or are influenced by interpersonal, intrapersonal, historical, and contemporaneous mechanisms: (a) interest, (b) goal choices, and (c) goal actions (p. 88). Moreover, directional pathways linking these model components denote the relationship between components and the individual's experiences and perceptions affecting the process of career development. In developing the model, the authors acknowledge two "liberties" taken in the development of their model. First, in order to allow for opportunities to

integrate other theoretical models that were not situated in Bandura's theory, there are some aspects of the SCCT model that do not fully align with Bandura's views on Triadic Reciprocity.

Second, there exists a departure from representation of reciprocal (bidirectional) pattern of relations proposed by Bandura's SCT in the visual representation of their model. The deviation exists because of the SCCT authors' decision to emphasize more linear pathways throughout the model despite their acknowledgment that, in reality, it is plausible that there may be some bidirectional relations. However, Lent, Brown, and Hackett (1994) also acknowledged that as individuals developmentally progress some features of their model may at times present reciprocal relationships.

Figure 3. Social Cognitive Career Theory Model (Lent, Brown, & Hackett, 1994)
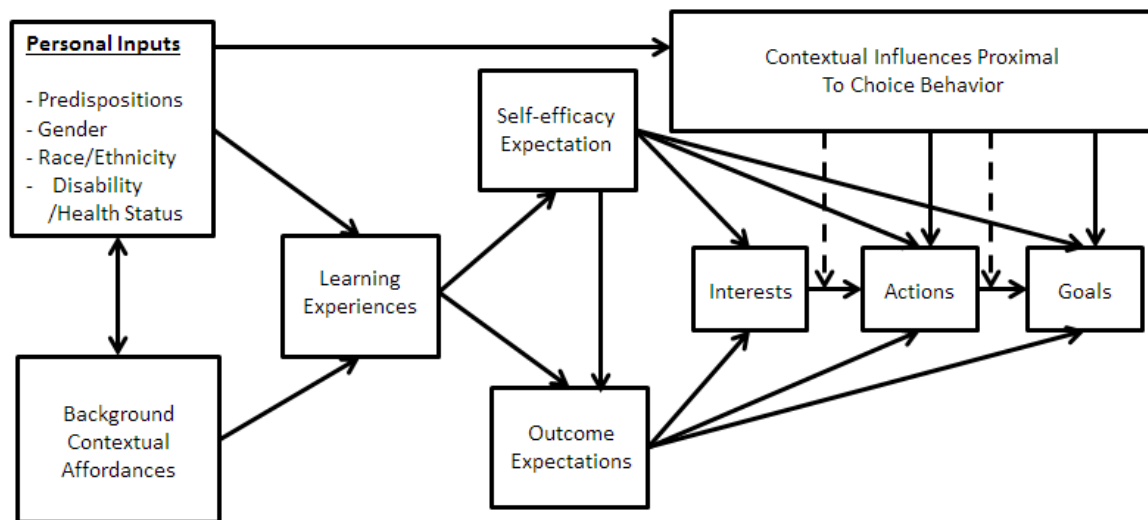
Next, the various model components will be explained beginning with what is referred to by Lent et al. (1994) as the secondary layer of theoretical analysis (p. 101). The components

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referred to are distal and proximal contextual variables that affect the SCCT process, and which I refer to as antecedents in the next section.

Antecedents

The secondary layer by Lent et al. (1994) is comprised of four model components: (a) background contextual affordances; (b) personal inputs; (c) proximal contextual influences; and (d) learning experiences that represent non-cognitive model components. People, events, social, and learning experiences associated with each of these SCCT components precede the career decision-making process. While some of these antecedents may remain distal influences, others can continue to influence career plans and decisions proximally. Next, each of these SCCT components will be discussed.

Background context affordance. These influences precede the career development process and consist of a variety of factors spanning opportunities, resources, social extensions of personal inputs, and culture. The opportunities afforded to different individuals are not equal. While some individuals might have ample opportunities to observe and learn from a variety of potential career role models, others may have limited or even no access. This differential access can contribute to or detract from an individual's perceptions of career possibilities. Furthermore, the availability of resources such as emotional and financial support can positively influence subsequent decision-making related to career development, whereas emotional discouragement or lack of resources can elicit the opposite effect (Lent et al., 1994; Lent, Brown, & Hackett, 2000). In short, background context affordances represent the environment and all of its components, which individuals must interpret throughout their development.

Person inputs. These refer to personal characteristics that are either biologically (i.e., sex, race) classified or socially conferred (i.e., gender, ethnicity, socioeconomic status, etc.) to individuals. The effects of these personal attributes may result in either positive or

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negative influences on learning experiences, including potential perceptions of one's person or abilities. These inputs also inform the interpretation of contextual variables that are proximal to a person's career interests and choice of related activities. For example, when an individual harbors negative beliefs about their abilities (e.g., math, writing, and science) it can diminish their choice to engage in corresponding learning opportunities. For this study, examples of inputs that are of interest are parental educational levels, race, and gender all of which have been shown to affect educational access and attainment as discussed in the previous sections. Moreover, this study is interested in whether the challenges that arise due to these inputs can be offset or overcome with support or if they are viewed as insurmountable due to challenges that arise proximal to career decision making.

Learning experiences. As individuals learn, the manners in which these experiences are perceived inform their self-efficacy determinations. The beliefs regarding one's ability are said to be informed and modified by four learning sources: (a) personal performance, (b) vicarious learning, (c) social persuasion, and (d) physiological states and reactions (Lent et al., 1994). First, when individuals participate in learning activities they engage in self-assessments. When the outcomes of these experiences and assessments produce desired results, success, it is expected that self-efficacy will increase as well as the likelihood or willingness to engage in the activity again. Conversely, if negative outcomes are experienced, especially repeated failure, the likelihood of repeated engagement diminishes along with the individual's ability beliefs. The second learning source probably represents the most common form of learning, observation. Vicarious learning occurs when individuals access opportunities to observe role models performing activities like in summer research programs and graduate education. During this process, individuals are able to develop not only skills, but also generate ability beliefs through modeling. The third form,

social persuasion, refers to external encouragement or discouragement to engage in learning experiences. When social actors and forces exert influence on an individual, the desire for acceptance can cause one to align with expectations. As Lent et al. (1994) stated, this influence, if used positively, can be useful in fostering an individual's willingness to make attempts at learning and practice desired behavior; but it must also be acknowledged that the converse is also possible when negative influences are present. While the first three sources involve activity engagement and external forces, the fourth learning source, physiological states and reactions, represent a much more internalized process. Through the psychological states an individual brings to learning experiences, whether positive (e.g., enthusiasm, passion, desire) or negative (e.g., anxiety, confusion, depression), one's perceptions of learning experiences and associated efficacy can be influenced accordingly. It is through these four forms of learning experiences that both self-efficacy and outcome expectations are directly influenced. As proposed in both of Tinto's theories of student persistence (i.e., student departure, doctoral persistence) and SCCT, it is clear that both environmental (background contextual affordances) and personal inputs can affect learning experiences. For this study, the learning experiences of participating in summer research and persisting through graduate education are viewed as necessary for potentially entering a research career. Yet, how influencing factors occur during these learning experiences and how they are perceived by students will have an effect on their persistence and decision making. Next, the proximal influences that may affect individuals persisting towards research careers will be discussed.

Proximal contextual influences. Unlike the previously discussed Background Context Affordances that are considered distal influences, contextual influences are proximal to the decision-making process. These influences are also both environmental and structural and are considered important during the active phases of educational or career

decision-making (Lent et al., 2000). Examples of these influences as it relates to career decision-making can include involvement with career networks, support networks, and structural barriers, such as existent or perceived discriminatory practices (Lent et al., 1994, 2000). These influences can occur both during immediately proximal learning experiences of graduate education, as well closely associated experiences like undergraduate education and research experiences. The student persistence literature previously discussed points to several potential influences that fit into the category of proximal influences (i.e., faculty, peer, family, and external community relationships, as well environmental and financial considerations). For the purpose of this study, these influences are of interest given that graduate education is viewed by many as a key requirement for participating in research careers and is usually the activity (learning experience) that occurs proximal to the choice to enter that career path. In particular, relationships that are developed during graduate education with faculty, peers, and professional networks play a major role in preparing individuals for entry into research careers, the latter of the three which represents and additional influence to those mentioned earlier. Therefore, it would be expected that these influence not only affect a student's academic persistence but ultimately their career choice.

Social Cognitive Processes

In addition to the antecedents, two social cognitive mechanisms, self-efficacy and outcomes expectations, are posited as moderating the antecedent level components of SCCT. Each of the two processes will be discussed below, followed by an elaboration of the SCCT core constructs.

Self-Efficacy Expectation. A foundational concept of social cognitive theory is self-efficacy which represents the judgments made by individuals as to their likelihood of success when engaging in an activity. It is through self-efficacy that an individual answers the question "can I do this task?" As Bandura (1989) stated, these determinations

represent the central mechanism of personal agency and are considered key determinants of individual choice of activities, as well as effort, persistence, and response to challenges (Lent et al., 1994). As this concerns education and career persistence, self-efficacy has been found to be predicative of choice in both domains, as well as individual performance within those domains (Hackett & Lent, 1992; Multon, Brown, & Lent, 1991; Lent et al., 1994; Sadri & Robertson, 1993). When an individual considers their likelihood for success, self-efficacy is not simply an assessment of their possessed skills or ability. It involves a determination of other personal and environmental factors that are perceived as potentially influencing the outcome. Thus, as factors change across situations, social cognitive theory recognizes individuals' ability to be dynamic and not fixed in their response to these changes during their processing and decision-making. Furthermore, a combination of both possessed and marshaled skills, as well as a strong sense of self-efficacy, increases an individual's probability for competent engagement (Bandura 1991; Lent et al., 1994). Within Social Cognitive Career Theory, self-efficacy plays a significant role because it directly influences both outcome expectations and individual interest while being directly influenced by the individual's learning experiences and indirectly by both personal inputs and background contextual affordances moderated by learning experiences.

    Outcome expectations. While self-efficacy answers the question of whether individuals perceive that they can do a particular activity, outcome expectations attend to the need to determine what will be the cost and benefit of the task engagement (Lent et al., 1994). Individuals' acknowledgement of the perceived costs and benefits (outcomes) of activity engagement along with self-efficacy perceptions determine their actions. Interestingly, while Bandura (1986, 1989) proposed that self-efficacy is likely to be the dominate construct of the two, he acknowledged that there are situations in which outcome expectations might take precedent. When an individual's outcome determinations move

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from the self-assessment of performance (e.g., ability to engage in a career successfully) to that of social and or physical outcomes (rewards), it is possible for them to persist towards a career goal despite self-assessment indications that career success might be difficult (Lent et al., 1994). For instance, the status obtained or the luxuries afforded by persisting towards a particular career can override an individual's perceptions of under-preparation or career inadequacies can act as a powerful catalyst for persistence because of the perceived reward. The latter two types of the outcome expectations, social and physical, introduce a notable inclusion in the SCCT model, that of values. By incorporating values within the outcome expectations construct an individual's preferences (as a result of socialization) and standards are given credence at the time of each decision they make to persist towards their career goal. To this point, in this study I consider the valuing of one's research by others and self as discussed earlier in the EOP and persistence literature, as an integral part of their outcome expectations. Referring back to the SCCT model, outcome expectations, like self-efficacy, have a direct influence over the three stages of career action choice (interests, goal choice, and goal action). However, self-efficacy also directly influences outcome expectations, but the relationship is not conceptualized as reciprocal. Finally, outcome expectations are influenced directly by learning experiences and indirectly by both personal inputs and background contextual affordances.

SCCT Core Construct

The career decision-making process is posited as being comprised of three key components: (a) interests, (b) goal choice, and (c) goal actions. Antecedents influence these three components of the SCCT model either directly or indirectly through the social cognitive processes, with the exception of proximal contextual affordances. The three core constructs of SCCT will now be discussed.

Interests. Interests represent an individual's determinations of likes, dislikes, or feelings of indifference that facilitate engagement in necessary skill development (Lent et al., 1994). Researchers of the concept of interest have made distinctions in how interest manifests in individuals by differentiating between individual and situational interests; moreover, individual interests are further differentiated into feeling-related and value-related valances (Eccles & Wigfield, 2002). Whereas both valences are focused towards an object or activity, feeling-related valances involve outlooks towards involvement, stimulation, and value-related valances are directed attributions of personal significance or importance (Eccles & Wigfield, 2002). These distinctions are necessary to consider as they allow for the recognition of potential social influences on the formation of interests. Within SCCT, interests can be affected by several factors including personal characteristics, background, learning experiences, self-efficacy, and outcome expectations. As conceptualized by Lent et al. (1994), interests are directly influenced by both self-efficacy and outcome expectations, and indirectly by learning experiences, predispositions to personal characteristics (e.g., societal views or stereotypes about race, ethnicity, gender), and other background contextual affordances (p. 93). In this study, interests are two-fold and include the desire to continue studying a particular topic and having it lead to a planned career choice, with particular emphasis placed on research careers.

Goal choice. As one of the core mechanism within SCCT, goal choices, are conceptualized as the intention to engage in a particular action or series of actions (Lent et al., 1994). This critical stage is considered a motivational catalyst in the career development process as it is believed that goals represent the desired outcomes, or reasons, for an individual choosing to engage in activities. As seen in the SCCT model, goal choices moderate both the interests and goal actions constructs. In addition, to the direct influence from individual interest, proximal contextual affordances also affect goal choice. Indirectly,

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the cognitive processes of self-efficacy and outcome expectations moderated by interests affect goal choice. Moreover, an individual's background contextual affordances, personal inputs and learning experiences can also indirectly influence goal choice. Ultimately, the cognitive process of goal choice is conceptualized as being influenced by a combination of the social and cognitive processes of self-efficacy and outcome expectations. For this study, this is where proximal influences such as interactions with faculty, family, and peer relationships and/or access to and engagement in professional networks begin to effect whether an individual chooses to persists towards their goal of educational completion and potential research career choice. When experiences are positive and supportive, an individual's interest can be sustained or even enhanced and they will choose to take up activities that support their goals. However, negative or challenging experiences can cause disinterest, disengagement, and possible abandonment of goals.

Goal actions. Also referred to as entry behaviors, goal actions represent individuals' commitment to their goal. When a person identifies activities that are supportive of them achieving their career goal, SCCT posits that they will take action to complete those activities. For individuals, like those participating in this study, who are considering becoming researchers, examples of these activities can include the selection of continuation of a major or minor in a research field of interest, application to and enrollment in a graduate program, presentation of papers at conferences, participation in a preparing future faculty initiative, submission of article for peer review, and the choice to apply for a research position.

Summary of SCCT

The above provides a comprehensive summary of the theory. As discussed, SCCT takes into consideration relevant distal and proximal antecedents that are with an individual from the early stages of life, while attending to both the critical social cognitive

processes of self-efficacy and outcome expectations, as well as the stages of career development (a) interests, (b) goal choice, and finally (c) goal actions. As discussed, individuals are shaped by their early life experiences as well as personal inputs that include but are not limited to race or ethnicity, gender, and socioeconomic status. While some of these experiences and inputs may remain distal influences, according to SCCT others persist throughout the process of career choice, and actively contribute to an individual's interests, goal choices and goal engagement through proximal contextual influences. For the purpose of this dissertation, the investigation will take into consideration distal antecedents while focusing primarily on identifying how these along with other factors manifest as proximal contextual influences that possibly contribute to participant's social cognitive processes and the core constructs of interest, goal choice, and goal action. These influences will be considered in the context of two closely related learning experiences: (a) undergraduate research experience and (b) graduate education. Thus, to revisit how these various components of the SCCT model relate to each other. First, both distal background affordances and personal inputs have a direct effect on the learning experiences of an individual. These learning experiences in turn directly affect the individual social-cognitive processes of self-efficacy and the establishing of outcome expectations. As individuals begin to formulate ideas about potential careers, three key mechanisms of interest, goal choice, and goal actions are directly affected by the individual's self-efficacy and outcome expectations. Additionally, the types of early life experiences and personal inputs along with more current or proximal influences can also affect the three mechanisms of career choice. For this study, I will focus on the concepts of proximal influences and the background contextual affordances and personal inputs that carry forward in the model as they relate to the graduate education experiences, and how

these experiences in order to interpret how these may affect the choice to enter a research

career.

CHAPTER 3: METHODOLOGY

In this chapter, I first present my rationale for choosing the methods used in this study. Second, I provide a description of the study sample, data, analytic techniques and limitations. Lastly, given the interpretive nature of qualitative research I provide a description of my background in order to provide readers some context as it relates to the researcher.

Rationale

The purpose of this study was to gain an increased understanding of how former undergraduate research students perceive supportive and or challenging experiences as they relate to identified aspects of student persistence (i.e., faculty, peers, professionals, community members, campus environment, and financial support) during graduate and professional education and how these experiences may act as proximal influences on their intentions to enter research careers. Given the paucity of peer-reviewed literature on the experiences of diverse populations participating in both the undergraduate research and the graduate school education context, as well as choosing careers in research a qualitative inquiry approach afforded the researcher the flexibility to use existing educational and career theories to conceptually frame the study while also allowing me to focus on the perspectives of study participants to expand our understanding of the phenomenon as it related to the research questions.

The purpose of qualitative inquiry is to explore, explain, describe, or emancipate (Marshall & Rossman, 1999). As previously stated, there is a paucity of peer-reviewed literature on the topics covered by this study. For that reason, I chose an exploratory

purpose for this work. Exploratory forms of qualitative inquiry focus on (a) the investigation of little-known phenomenon, (b) the identification of meaning and categories, and (c) the generation of hypotheses to be used for future research (Marshall & Rossman, 1999). Each of these purposes aligns with the needs within the literature available. There is a need for more research, better understanding of the phenomenon, and guidance for future research.

When conducting qualitative inquiry there are three types of data that can be used: those being (a) in-depth, open-ended interviews, (b) direct observation, and (c) written documents (Patton, 1990). For this study, I use data captured via the first method. The additional data used, while not part of an in-depth interview process, is information gathered from open-ended questions delivered via an online survey. These data are investigated using a thematic analytical process known as Framework (Ritchie & Spencer, 1994). This method of analysis was chosen for its structured system of reviewing data. The remainder of this chapter will discuss in more detail key aspects of this qualitative study including sample, data and data management, analytic approach, researcher trustworthiness, and study limitations.

Sample

As previously discussed, the participants of both the Summer Pre-Graduate Research Experience (SPGRE) and Moore Undergraduate Research Apprentice Program (MURAP) programs include a diverse group of students who had expressed an interest in gaining undergraduate research experience for preparing for graduate school and a potential research career. Given my close relationship with the program and the participants of this study, this sample should be considered a convenience sample that was drawn mostly from summers that I had been affiliated with the program. During the summers of 2004 through 2007, 186 students were admitted to the program with the

majority completing all programmatic requirements during their respective summers. Table 1 provides a demographic overview of this convenience sample across the race, ethnicity, and gender variables.

Table 1

2004-2007 SPGRE Participants by Year, Race/Ethnicity and Gender

Year	African American		American Indian		Asian American		Hispanic /Latino		White		Subtotals	
	F	M	F	M	F	M	F	M	F	M	F	M
2004	20	15			1		4	3	2		27	18
2005	*27	*9	1		1		6	1	1		*36	*10
2006	*23	7	1				10	3	3		*37	11
2007	31	5	1				7	2	1		40	7
Subtotals	101	36	3		2		27	9	7		140	46
Grand Total												*186

*In 2005 there were three African American participants (1 female; 2 male) whom had participated in the previous year. Additionally, in 2006 a different African American female participated for a second year. Thus each of these numbers should be reduced by one when calculating the actual number of individuals who participated in the program.

As can be seen in Table 1, the majority of the participants ($N = 186$) between 2004 and 2007 were female ($n = 140$) and African American ($n = 137$); however, the African American count included four students who participated in the program twice thus resulting in 133 African American individuals who participated in the programs between 2004 and 2007, and an overall reduction of four individuals from the grand total resulting in 182 actual participants. While the gender ratio may seem skewed, it is representative of the college going rates for underrepresented minority groups in which women are either increasing or the consistently the majority of college going individuals. Specifically for African Americans, the ratio of college going individuals has been approximately 3:1 female to male or approximately 72-75% for quite some time. After reviewing the available sample, I determined that the representation of individuals in groups other than African

Americans were too small for quantitative analysis; also if these individuals were included for the qualitative analysis, it could result in the possible identification of the participants once disaggregated into subgroups (e.g., year of participation, college major). For that reason only, the interns who identified as African Americans (Non-Hispanic) were included in this study. Of the African American participants, other characteristics pertinent to this study included the college major of the program participants, which often correlated with the domain of their research. The college majors were categorized into three domains (a) Arts and Humanities ($n = 27$); (b) Social, Behavioral, and Economic Sciences ($n = 58$, excluding one individual who participated twice); and (c) Science, Technology, Engineering, and Mathematics ($n = 48$, excluding three individuals whom participated twice). The distribution across research domain categories is near balance, with only Arts and Humanities being slightly underrepresented. It is important to note that how research is conducted in the different domains of academic training and research (i.e. Arts and Humanities, Social, Behavioral, and Economic sciences, STEM) can vary considerably in terms of the level of autonomy a student may have. In the domains of arts and humanities or Social, behavioral, and Economic Sciences, students may find that more often they work alone with their adviser, whereas within the domain of the STEM fields, it is more likely they will work as part of a collaborative research team. Additionally, the type of undergraduate institution that individuals in the sample attended varied. Four types of undergraduate institutions were used to categorize the participants. The sample representation was distributed across the institution types as follows: (a) Historically Black College or University ($n = 71$, excluding four participants who participated in the programs twice), (b) Traditionally White Institution ($n = 60$), (c) Hispanic Serving Institution ($n = 1$), and (d) Historically Native American or Tribal Institution ($n = 1$). It is starkly noticeable that the distribution across institutional types skews toward two of the four types; however,

between those two types the distribution is nearly balanced. These various types of institutions are important to note because the majority of graduate degree granting institutions in the United States are considered to be TWIs, and three of the four institution types are historically focused on serving members of underrepresented minority groups. Based on the information provided above, the two individuals that attended institution types with low representation were allowed to complete the survey if they chose but were dropped from the interview stage of the study so that analyses and reporting could be conducted across research domains and institutional types without risk of deductive disclosure. Thus, of the 133 African American program participants, 131 remained as potential interview study participants, reflecting one participant being dropped from both the 2006 and 2007 cohorts.

This study includes the use of secondary data and two stages of data collection (i.e., online survey, and semi-structured interviews). The analyses of additional details regarding the samples for each of these stages of data collection will be discussed along with the procedures employed in the latter parts of this chapter, and the final sample compositions will be presented in Chapter 4 along with the results.

Data

Three sources of data were used for this study. After receiving clearance from the Institutional Review Board (IRB) at the University of North Carolina at Chapel Hill, I first reviewed secondary data that was made available from the two summer programs. These data included demographic information (e.g., name, email, phone, undergrad institution, etc.), as well as both entrance and exit interviews that were conducted during the intern's summer program participation. How these data were used will be discussed in the next sub-section on secondary data.

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Next, two methods of primary data collection were employed in order to capture additional information for analyses. The first of the two primary data collection methods was an online survey used to obtain data post-program updates on each participant's background variables (e.g. parental educational attainment), as well as their activities and future plans related to topics of education and work. Second, a semi-structured interview was delivered to a sub-sample of those who completed the survey. The semi-structured survey inquired as to various supports and barriers experienced during graduate education that may have affected their decision to pursue a career in research. In the following sub-sections, the secondary data source will be detailed followed by the quantitative and qualitative analysis plan implemented for the study.

Secondary Data

For this study, secondary data was used for purposes of both data collection and data analyses. In regards to data collection, the demographic information obtained from the program directors was used to invite participants to the study and track responses to the survey, and which will be discussed in more detail shortly. Given the lapse in time between program participation and this study, it was important to gather as much demographic information as possible in case the available contact information was no longer viable. For individuals whose contact information was identified as no longer viable, secondary data was used to cross-reference available data with information obtained via digital search methods. These digital search methods included both public internet searches (e.g. Google, Yahoo), as well as the use of the social networking service Facebook. Facebook is a service that was established in 2004 which allows individuals to create personal profiles and connect with others who have also created profiles. Given that this service encouraged individuals to keep their information current in order to maintain their connections, which Facebook deemed "Friends," and these connections would be ones that

individuals would want to maintain for many years, it was determined that the service may be a viable means for longitudinal program follow-up. Unfortunately, as this service was relatively new by the summer of 2004, the 2004 program participants did not have a group until more than a year after they had completed the program. However, by the summer of 2005, participants were invited to join a Facebook group for their respective cohort. Each summer participants were informed that the Facebook group was to serve two purposes. First, it would be available as a means for them to maintain contact beyond the scope of the program duration. Second, it would provide the summer programs with a means for keeping in contact with them in the future. Participation in the Facebook groups was voluntary and there were no ramifications for choosing not to participate. Given the semi-public characteristics of Facebook, meaning that anyone can choose to join but a membership account is required, and the agreement made between summer program staff and the interns a document outlining the planned use was submitted to UNC-IRB for approval (see Appendix A). Through these digital search methods current information was either verified or newly obtained for the majority of participants between 2005 and 2007. However, little information for the 2004 cohort could be verified or updated, and therefore the available information was used to contact those participants.

In regards to the use of secondary data as it applies to data analysis, each summer the SPGRE and MURAP programs interns were asked to participate in both semi structured entrance and exit interviews as part of the program evaluation activities. The program administration planned the interviews to occur within the second and third weeks for program-entrance data capture and the eighth and ninth weeks for program-exit data capture. During the first week of the program, participants spent a significant amount of time being oriented to the campus, program, and research adviser expectations, thus entrance interviews were conducted after this period. By conducting interviews in the

second and third weeks, students were able to begin their research activities and give informed feedback related to early interactions with preceptors and other researchers when applicable. The exit interviews were conducted in the eighth and ninth weeks which allowed for the capture of data specific to their research experience without the distractions of week ten in which interns were primarily focused on the finalization and submission of the program deliverables and preparation of for departure.

Interviews were administered by both fulltime research assistants affiliated with the SPGRE evaluation team and graduate assistants (GAs) who were hired specifically for the summer program. The GAs received an orientation to the various program components in which interns would participate, as well as training in interview techniques from the fulltime research assistants. The interview schedules used were designed as semi-structured interview protocols, which allowed respondents to not only answer the predetermined questions but also provide additional thoughts which they felt were relevant to the topics, while also allowing the interviewer to ask probing questions based on the responses of the program participants. Each interview followed an established protocol that began with the reading of an informed consent statement. The informed consent statement provided the intern with an overview of the interview process that included (a) the request for permission to record the interview, (b) the purpose of the interview, (c) the responses provided by the interns that reflected their feelings most accurately were most valuable, and (d) the explicit statement that the interns had the right to not answer questions or stop the interview at any time if they chose. The data from the interviews provided a snapshot of the summer program experiences, but more importantly a context for how the students viewed their future academic and career prospects for engaging in research activities. How these data were used in this study will be further discussed in the section of this chapter on qualitative methods.

SPGRE/MURAP entrance interviews. The entrance-interviews were constructed with a total of 36 questions. The questions include a variety of demographic information, graduate school intentions, preceptor and research experience perceptions, peer interactions, and research environment. Examples of the types of questions included in the entrance-interview schedule are (a) "Can you envision yourself in a research career at a university or college?," (b) "Do you intend to attend graduate school?," (c) "Describe your relationship with your preceptor?," and (d) "Are you comfortable in your current research setting?." The full entrance interview schedule can be reviewed in Appendix B.

SPGRE/MURAP exit interviews. The exit-interviews were constructed with a total of 31 questions, reflecting the exclusion of a few demographic questions initially included in the entrance interview. Questions on the exit interview schedule were phrased similarly to those of the entrance interview in order to obtain comparable data. Again, the questions include a variety demographic information, graduate school intentions, preceptor and research experience perceptions, and peer interactions and observations like the examples given above and as seen in Appendix C.

Secondary data preparation. The demographic data received from the program directors did not require any preparation. However, both the pre- and post-program interviews were recorded in either an audio cassette or digital audio format depending on the program year. At the time of the study only some of the interviews had been transcribed, therefore the original audio files were referenced for review first. The audio files for the individuals who completed the survey and were selected for interviews were identified and scanned for a variety of topics. The responses to the questions asked during the intern's summer program entrance and exit interviews provided benchmark information on a variety of topics including the participant's socioeconomic family background, previous research experience, familiarity with conducting research, and

graduate school and research career intention. Audio from the interviews that was determined to be pertinent to the research questions for this study were then transcribed into Microsoft Word files for import into the qualitative analysis software used for this study.

Primary Data Collection and Analysis

In this study, I used principally qualitative methods of analysis, with the quantitative analysis being limited to exploratory data analysis to better understand the composition of the sample. In order to capture data for each of these analyses two data collection approaches were used. First, survey data was collected in order to acquire up to date demographic information for each intern, as well as their perspectives on graduate degree attainment as it related to their career goals. Second, I conducted individual interviews in order to gain a more in depth understanding of the participant's academic choices to date and for those attending graduate education their perceptions of supports and barriers experienced during their program achieving their goal. Additionally, the interviews were used to obtain information as it related to the interns perspectives regarding how those supportive or challenging experiences influenced their research career choices to date.

Study invitation and informed consent. The individuals who met the criteria of participating in either the SPGRE or MURAP summer research programs during the summers of 2004-2007 and being of African American background were invited to the study via email using the invitation letter (see Appendix D). In addition to receiving the letter, the participants were sent a file containing an informed consent document outlining the details of the study and their rights as participants. The informed consent document was based on a standard form provided by the UNC Institutional Review Board and indicated

that acceptance of the terms was provided by completing the survey which will be described next. The informed consent form can be reviewed in Appendix E.

Online survey. The survey employed in this study was comprised of demographic questions that aligned with the data previously collected during participant's summer program experiences, as well as information on their post program activities. Examples of the survey questions includes demographic questions such as "Please indicate the degrees you have earned, school attended, major field of study, and time of completion" and "Please indicate the highest level of education (left column) completed for each parent or guardian at the start of each point of your academic career." As mentioned, in addition to the demographic questions, participants were asked about their post-program activities as they related to academics. Questions related to this topic included "Please share your thoughts about earning a doctoral degree" and "Please share your thoughts regarding any choice you have made to delay entrance into a doctoral or other graduate program."

This information allowed for the identification of post-program changes by comparing new responses with responses available in the secondary data. Also, these comparisons provided additional context for analyzing the participant interviews conducted for this study. For more information about the survey, it can be reviewed in Appendix F.

Survey administration. The survey was delivered using the Qualtrics (www.qualtrics.com) online survey instrument, which was available through the Odum Institute for Social Science Research at the University of North Carolina at Chapel Hill. Qualtrics had several advantages as a survey tool. First, as an online tool, it was easily configurable and provided useful survey design features, which addressed complex survey requirements such as forced question responses and skip-logic patterns of questioning. Qualtrics offers built in statistical metrics features that allowed for summarization of

responses. For users, the program delivers an online survey experience that is clear and easy to use.

Qualitative Methods and Plan for Analysis

Sample

The individuals that comprise the sample used for the semi-structured interview stage of this study were selected from the survey respondents. As previously mentioned, all African American (Non-Hispanic) interns who participated in the two programs between the years of 2004 and 2007 were invited to take the survey. Unfortunately, the contact information for the 2004 participants could not be verified as current. As a result the response rate for that group was inadequate with only three participants from that cohort completing the survey thus agreeing to participate in the study. For this reason, the 2004 cohort was dropped from the study. Of the 98 (102 minus the four individuals who participated twice) potential study participants across the remaining cohorts, 41 participants completed surveys. From those who responded to the survey, a subset was selected to be invited for interviews. Additional detail about this sample is provided in the next chapter along with the survey results. The selection of participants for the interviews was conducted using a combination of random and stratified sampling methods. This method of sampling allowed me to address the overrepresentation of individuals who entered graduate school immediately that was present in the response sample, by ensuring that an equal representation for those who delayed entrance into graduate school were also invited to participate in the interview process.

Data Sources

Two sources of qualitative data were used during this analysis. First, responses to open-ended questions gathered during the SPGRE and MURAP summer experience, which

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were previously described. Second, data were collected using qualitative investigation techniques, which will be described next.

Secondary data. As previously discussed during the SPGRE and MURAP summer programs students participated in both and entrance interview, and an exit interview. These interviews were comprised of primarily open-ended questions.

Semi-structured interviews. Given the limited peer reviewed literature on minorities participating in summer research programs as well as graduate level study and how these may be proximal influences on career decision making, it was important to utilize a technique that allowed me to use constructs derived from available theories and empirical research to shape the discussion, while also allowing for the introduction of additional considerations from study participants. Using a semi-structured interview schedule allowed respondents to not only respond to the pre-determined questions, but also elaborate on topics and potentially introduce topics and questions that they feel are important to the conversation (Ritchie & Lewis, 2003). Because I used a phenomenological approach to this study, there were some considerations when designing the interview schedule. As previously stated, phenomenological research focuses on the phenomenon and not the individual, thus questions focused on experiences with different actors or environments encountered by the study participants. As I was interested in gaining insight into the supportive and challenging experiences during graduate education in order to understand how they might affect decisions to enter research careers, broadly constructed questions were used to allow for the study participants to include whatever they felt was appropriate in describing their experiences. Additionally, probing questions were included in order to assist respondents in thinking about topics being discussed. The questions used for the study can be reviewed in Appendix G.

Interview administration. Due to the disbursement of the sample across the United States a participants were offered a variety of telephonic and internet based technologies for conducting interviews.   Along with the option to conduct the interview via telephone with an audio recording device, participants also had the option to use one of two internet based technologies: a) Skype (www.skype.com) and b) GoToMeeting (www.gotomeeting.com).   If used, the latter two internet based services offered additional features that would support data collection , such as providing the participants with the opportunity to type and share typed notes during the interview, in addition to the conversation being audio recorded.

Each of the interviews was scheduled for up to 60 minutes, and participants were instructed that (a) they may choose to not participate or opt out of process at any point of time, (b) they had the right to not answer questions during the sessions, and (c) that there are no right or wrong responses to questions and, therefore, they should not feel compelled to provide responses that may seem to be acceptable or desired, and (d) that significant efforts would be employed to remove identifiable information (e.g., names, schools, research domains) in order to protect the identity of them and those mentioned in responses. This step was done in order to ensure that participants understood their participant rights and to assist in establishing a trustworthy report in order to encourage candid responses that were reflective of their sincere perspectives and priorities.

Planned Analyses

Qualitative software. Although there are advantages to conducting qualitative research manually there have been significant technological advances in the area of software assisted qualitative analysis. NVivo (current release version 10) will be used for data analysis. This software is an accepted tool in qualitative research and provides a robust suite of features that lend themselves well to data analysis.

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Research questions. The questions guiding this study focus on the supportive and challenging experiences of former undergraduate summer research interns during graduate education, and how they might affect research career choices. An integration of theories related to collegiate student persistence, as well as Social Cognitive Career Theory are used to provide a framework for investigating the phenomenon graduate education and its role on research career choice.

The first research question is "How do experiences related to graduate education and the components of Social Cognitive Career Theory help us to understand former undergraduate research intern choices of persistence towards Graduate Education completion?" The second overarching research questions is "How do experiences related to graduate education and the components of Social Cognitive Career Theory help us to understand the research career choices former undergraduate research interns?" Each of these overarching research questions have more specific sub-questions that help to better focus the study. These research questions and their association to SCCT can be viewed in the Research Questions and Theoretical Framework Crosswalk in Appendix H.

Qualitative procedures. For this study, I use an analysis approach that was established in the 1980s by a group of researchers at the National Centre for Social Research in the United Kingdom (Ritchie & Spencer, 1994). Framework (Ritchie & Spencer, 1994), also referred to as Framework Method (Gale, Heath, Cameron, Rashid, & Redwood, 2013), is a matrix based approach to managing qualitative data during the analysis process. Originally used for policy research, over the last few decades, this approach has also been used in the medical and health fields (Gale et al., 2013).

Framework is a form of thematic analysis that uses a matrix format that provides a structured and systematic way of looking at qualitative data across individual cases and or themes (Gale et al., 2013; Ritchie & Lewis, 2003). While there are different approaches to

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thematic analysis, this type of analysis is generally used to identify key themes, concepts, and emergent categories within qualitative data (Ritchie & Lewis, 2003). The Framework approach is a flexible approach and used for both a deductive and inductive manner, either separately or jointly depending on research design. In this study, I use an inductive approach to analysis. Patton (1990) described inductive analysis as an "immersion in the details and specifics of the data to discover important categories, dimensions, and interrelationships" (p. 40). Though flexible, this analytic method is considered to be one that facilitates rigorous and transparent data management, while a systematic analysis is being conducted (Ritchie & Lewis, 2003).

While Ritchie and Lewis (2003) provided a comprehensive overview of the Framework approach, Gale et al. (2013) offered a more concise and explicit step-by-step account of the stages in conducting Framework analysis. Of these two accounts, I use the latter to structure the Framework process, while making connections to the former piece of literature written by one of the originators of the approach, Jane Ritchie. The seven stages of the Framework Method are the following:

1. Transcription – Ritchie and Lewis (2003) stated that 'raw' data can come in various forms but it is commonly takes the form of verbatim transcripts of interviews or discussions (p. 220). As transcription during the interview process is unlikely, interviews are more than likely recorded in order to capture an accurate account of the event. It is important that these audio recordings be of good quality in order to allow for an exact account of the interview. Additionally, Gale et al. (2013) noted that the process of transcription is a good opportunity to begin the second step of the Framework process, familiarization, as through this process the transcriber begins to become immersed in the data. They also state that finished transcripts should

allow for wide margins that can be utilized for note taking during the analysis process.

2. Familiarization – Before attempting to identify codes or themes, it is important for the researcher(s) to take time to become familiar with the data. This can mean listening to audio of the interviews and or reviewing transcripts multiple times before beginning coding activities. As one does this, they should take notes about thoughts, impressions, methodology, etc. to be used in later stages of analysis. Ritchie and Lewis (2003) make it clear that this process need not include all data, but the choice of data should be purposeful so that the familiarization process provides a feeling for the diversity of characteristics and circumstances within the data set.

3. Coding – This is the process of reviewing transcripts and identifying topics identified within the data by the researcher. These codes are intended to classify data so that a systematic, comparative approach can be employed during analysis (Gale et al., 2013). For inductive approaches, 'open coding' in which the researcher simply applies codes to anything that may be of relevance can be used. During this process, the codes developed can refer to a variety of things including, but not limited to, behaviors, events, values, emotions, methodological notes(Gale et al., 2013; Ritchie & Lewis, 2003). While this may seem to be a loose approach to identifying useful information, subsequent steps are used to bring structure to the topics identified before data reduction activities.

4. Developing a working analytical framework – For this step, the codes are organized in a manner that they can better be understood within the context of the study. Ritchie and Lewis (2003) called this process indexing, in which themes are sorted and grouped under a smaller number of broader, higher order categories or 'main

themes' and placed within the overall framework" (p. 221). It should be noted that each category should contain an "other" category in order to catch any issues that do not fall within a subcategory. This process involves reading each phrase, sentence, and paragraph and can take several iterations before complete (Ritchie & Lewis, 2003). Once the categories and subcategories have been identified and organized, a numerical identifier is sometimes associated with each to assist with analysis.

5. Applying the analytic Framework – Once codes have been organized into an analytical framework (or index; Ritchie & Lewis, 2003), the next step is to apply these codes to the transcripts. Ritchie and Lewis (2003) referred to this as "Labelling or tagging the data," the process of associating the determined codes to the raw data so that it can be organized and tracked throughout the remainder of the analysis. Occasionally, a researcher may find that multiple codes are associated with the same segment of data and if this occurs, researchers should not hesitate to apply all of the identified codes.

6. Charting data – In order to manage data, a spreadsheet is used to organize cases and themes. Each respondent is considered a case and is allocated a row in the in the matrix, while every theme and subcategory is allocated a column (Ritchie & Lewis, 2003). Because qualitative data can be voluminous, it will be necessary for the researcher to summarize data at some point. As data is summarized, the researcher should attempt to use as much of the respondents original words as possible at least during the first iteration of the process. Moreover, it is important that notes be kept about how decision to summarize data and placement within the matrix are made. To that point, Gale et al. (2013) stated that it is important to note that conducting high quality charting requires balancing the reduction of data (summarizing) with the retaining of original meaning of the raw data.

7. Interpreting Data – Interpreting data, referred to as "summarizing or synthesizing" data by Ritchie and Lewis (2003), is an iterative process. During this stage, impressions, ideas, concepts, and potential themes that have been noted through the previous stages should be revisited as reflective tools. During the early iterations, it is important that the original language of the respondents be as available as possible, so that a strong understanding of the intended meaning is obtained by the researcher before any significant summarization occurs. In addition, material or information should not be dismissed too early in the process, as the need for its inclusion may arise later in the process (Ritchie & Lewis, 2003). With each consecutive iteration, emergent characteristics, concepts, and possibly typologies may be identified, allowing the researcher to explore relationships across data.

These seven steps comprise the Framework approach to qualitative data analysis used in this study. Again, this process of analysis is iterative, and therefore movement through these steps several times should be expected. Additional codes and themes may be identified during the process, and charted data will be collapsed into smaller matrices as broader themes are emerge to the researcher, and during these activities it will be important to maintain records of each iteration and copious notes on how decisions are made.

Qualitative Data Collection and Storage

As previously discussed qualitative data collection involved secondary data, a survey, and semi-structured interviews. Secondary details in two forms: physical (i.e., paper and audio tape) and digital copies of files. Access to secondary data was granted to the researcher by the directors of the two programs and physical copies of the materials were accessed in a secure, controlled area provided by the program staff overseeing the archival of this data. Digital copies of materials were also made available within this

space, but also accessed via secured means from offsite. When used off site, these files were accessed via a secured network utilizing Cisco Virtual Private Network (VPN) technology. Use of this security software is the university approved means of accessing information while away from campus and ensures that all information is protected.

For the primary data collected via surveys and interviews, these data were accessed via a computer on the secure university network, or a university issued laptop with the appropriate security protocols installed and used. The use of online services such as Skype or GoToMeeting both provide a level of security by the provider, and the security of transmission was also supported by the secure network of the university and VPN software.

Trustworthiness

Part of the qualitative research process is the planning and completion of steps to enhance the trustworthiness of findings and the interpretation of the findings. In this study, I used three actions to support the trustworthiness of the analysis and discussion of findings. First, given my closeness to the topic being researched, it was important for me to disclose my positionality, as seen in the next section. This disclosure was the result of a constant and iterative process of reflection on my motivations for conducting the research, my experience as a graduate administration professional, as a graduate student, and as an African American, first generation college and graduate student. Glesne (1999) stated that:

> Reflexive accounts, for many researchers, demand more than personal tales of research, problems, and accomplishments. They require thought about the researcher's position and how the researcher is affected by the fieldwork and the field relationships. (p. 177)

To this end, my positionality statement provides information on my personal background, education and work history, and how I came to be interested in topics related to this research.

Second, the research conducted is grounded in both theory and peer-reviewed research. By employing theory triangulation, which can take the form of "using multiple forms of data collection, multiple sources, multiple investigators, and/or multiple theoretical perspectives" (Glesne, 1999, p. 32), I drew upon several social cognitive theories that looked at both undergraduate and graduate student persistence, as well as the process of career decision-making. Additionally, to a lesser extent, I utilized multiple forms of data collection as the survey included a few questions that cross-referenced with questions included in the semi-structured interview protocols.

Lastly, I utilized my network of graduate students and higher education administrators and faculty to discuss my findings. This activity of peer review involves gaining input from external sources that provide feedback for the researcher on their findings and interpretations (Glesne, 1999). By employing these activities, I was able to better approach my work with a greater degree of objectivity. While it is my view that there is never true objectivity, I used my self-reflection, multiple sources of theoretical grounding, and feedback from knowledgeable peers to increase confidence in my analyses..

Positionality

As stated in the previous section, I engaged in an iterative process of reflecting on my position in relation to the research I was conducting. This reflection included taking into consideration my personal background, my educational and professional experiences, my motivations for conducting the research, and my views as an African American male who was the first in his immediate family, and approximately fourth in his entire family , to attend college.

Being the first of my family born in the United States to parents of West Indian backgrounds (i.e., Barbados [Mother], Trinidad and Tobago [Father]), I did not have a multi-generational perspective on being of African American background within the United

States. My parents came to the US seeking greater opportunities for themselves and their future children. This influences how education was discussed within my family home and the expectations that accompanied those views. The majority of my childhood was spent growing up in a working-class to middle-class neighborhood of primarily Black families from both the US and foreign countries. Despite not coming from a multigenerational family history within the US, my awareness of being Black and what that meant in the US was not lost on me. It may have been due to my growing up outside of Boston, MA in the 70s and 80s when racial tensions were high, as well as my parent's intentional preparation of myself and my brother for the world they knew we would be entering once we left home each day. My parents who completed high school (mother) and high school/trade school (father) made the importance of education clear. They expected me to attend college, which I was aware of at an early age. While several of my friends had similar family educational background and emphasis on educational attainment, it was not the case for all of my neighborhood peers. I attended public schools from elementary/middle school to high school levels. Within the latter, my initial motivation for the topic of increased participation of underrepresented minorities in STEM fields arose. During my junior year, a family friend encouraged my parents to enroll me in an after school program, Massachusetts Pre-Engineering Program (MassPEP), that focused on exposing students to STEM fields through a combination of both interaction with STEM professionals and conducting hands-on STEM activities; little did I know that my involvement in MassPEP would later play a role in my professional career and the choices I would make in my academic pursuits.

While my initial academic major, of architecture, was related to the STEM fields, I did not complete my baccalaureate degree in that field, but in Business Administration. While in college, I was very involved in issues of diversity and student development and

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retention through committee work, and my position as a resident assistant. By graduation, I had decided not to enter corporate industries but to work in higher education. My first position at the Massachusetts Institute of Technology (MIT) was with the Special Assistant to the President, and through my work with Dr. Clarence Williams, I was further exposed to the importance of underrepresented students in STEM fields. It turned out that Dr. Williams was a founding board member of MassPEP, and through his position, he continued his work beyond the K-12 work of MassPEP into the higher education context. Over several years of working with Dr. Williams and also a brief time actually working for MassPEP, my career interest became more focused on increasing the representation of African American, Hispanic, and Native Americans in STEM careers. My interest continued to grow in my next position as Assistant Dean for Graduate Students at MIT, where I focused on diversity recruitment and retention, as well as summer research experiences for diverse undergraduate students.

My interest in STEM participation across the K-12 and collegiate levels of education was supported by my initial graduate work that focused on K-12 education and non-profit management during my time working for MassPEP, Inc. At this point, I chose to leave my professional career to pursue a doctoral degree in 2004, focusing on educational research and program evaluation as it related to educational opportunities programs (i.e., summer research programs) established to provide first-hand experience in conducting research and preparation for graduate level education to underrepresented minority undergraduates.

Those experiences prior to entering my doctoral program, and my experiences during my doctoral program, have informed my interest in my current research. The early emphasis of the importance of education and the high expectations of attending college, which was not common in my family, has shaped my view that education is a liberating opportunity for historically marginalized populations in the United States. Additionally,

the individuals and professional opportunities I have encountered have exposed me to the goal of increased STEM participation, as well as the challenges and more successful practices to achieving that goal. While these experiences have been positive and reaffirming of my interest, my graduate experience has not been without challenges. Given that in this study I was investigating the experiences of graduate students and key proximal influences to the graduate experience, I found myself at times reflecting on my own experiences throughout the process. As experiences of those in the study resonated with my experiences and the graduate students I worked with both at MIT and most recently at my own university as the Director of Diversity, Recruitment, and Retention, I had to make a concerted effort to reflect on how those experiences might influence my analysis and interpretation of findings. When my experiences as a student became overwhelming at times, I took time away from analyzing data in an effort to gain a degree of distance from the work. While challenging, every effort was made to focus on the data provided by the students during analysis, recognizing that situational events and the associated emotions were not immediately a part of my analysis. The information provided in this section provides an overview of my background and experiences that provide a context for explaining that the current topic is a very personal interest of mine in several ways (e.g., educational opportunity, increased inclusiveness in STEM fields, programmatic effectiveness and replication), as well as I have stated in chapter one a national imperative for remaining globally competitive and nationally more inclusive.

CHAPTER 4: RESULTS

In this chapter, I discuss the results of both the short survey and the semi-structured interviews conducted. The short survey offers demographic information on those who were invited to the study and chose to participate. Next, I report on my analysis of the data gathered via the semi-structured interviews using the seven proximal influences (i.e., environment [university], faculty, peers, professional network, community [outside of university], family, financial considerations) that were identified from the student persistence literature as a framework for the presentation of the findings, as well as the participants views on research careers. While these overarching categories were predetermined, themes that emerged during data analysis are reported within each section.

Survey

In this first section, I report on the results of a short survey, including providing an overview of the final study sample based on their responses to demographic questions and open-ended questions. In the last chapter, I discussed the population from which the sample for this study would be drawn. Former participants from the 2004 - 2007 Summer Pre-Graduate Research Experience (SPGRE) and the Moore Undergraduate Research Apprentice Program (MURAP) were sent invitations to the study via a short survey and disclosure of IRB requirements. The response rate for each of the four cohorts was 9% (3/35) for 2004, 36% (13/36) for 2005, 40% (12/30) for 2006, and 44% (16/36) for 2007. As mentioned in the last chapter, four individuals participated in the programs twice, and while they are represented in each of the cohort counts just reported, only one of the four completed the survey and did not participate in the interview stage of the study.

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Additionally, of the two individuals who attended either a Hispanic Serving Institution or a Tribal College and University, only one completed the survey and did not participate in the interview stage of the study. Given the low response rate for the 2004 cohort and the efforts made to update contact information and solicit potential participants via various resources (i.e., Google searches, Facebook, LinkedIn), the 2004 cohort was dropped from the study. The sample for the participants from the 2005-2007 cohorts thus was 102 of which four individuals had participated in the program twice resulting in a total of 98 individuals available to take the survey. Thus, the effective response rate of 42% (41/98) had acceptable representation from each cohort.

As this study focused on individuals who attended graduate school, an additional screening of respondents eliminated three individuals who did not attend graduate education, and five individuals who went to professional school. The resulting sample was comprised of 33 individuals who attended graduate level programs of which 11 individuals delayed-entry into their graduate programs, and the remaining 22 participants entered graduate programs immediately following completion of their undergraduate degree. For the 33 study participants who attended graduate programs, five are male, and 28 are female. Additionally, 12 of the participants attended Historically Black Colleges and Universities, and the remaining 21 participants attended predominately white institutions (PWI). Participants reported that their intentions to attend graduate school formulated at the pre-college level ($n = 9$), first year of college ($n = 3$), second year of college ($n = 5$), third year of college ($n = 8$), or fourth year of college ($n = 6$) with two individuals not reporting. Fifteen of the participants had an initial degree objective of a master's degree, and 18 entered graduate education intending to obtain a doctorate. Of those students who entered master's programs first, six reported that the master's degree was required in order to pursue the doctorate afterwards, whereas nine indicated that the master's degree was not

required. When asked to explain the decision to pursue a master's degree that was not required for a doctoral program, three respondents indicated that their master's degree programs were terminal degrees that would allow them to practice their profession without a doctoral degree, one indicated it was a requirement for their current position, and others stated that the choice was assisting them in determining their next steps and strengthening their readiness for doctoral level study. Examples of the responses for those still considering doctoral level study included thoughts ranging from being unclear about the choice to complete a Ph.D. to explicit strategies for making the transition to the next level of education. One survey respondent stated, "I was unclear on if I wanted to complete a Ph.D. program and what I wanted to complete a Ph.D. program in." Another participant shared, "I went this route to allow myself more time and experience to refine my research interests and career goals before committing to a Ph.D." A third participant stated, "I didn't feel that my application would stand out if I applied to various doctoral programs right after undergrad. I took that opportunity to expand my experience." A fourth offered, "I chose to complete a master's degree because I was shifting fields and wanted to get basic training in the theories and concepts [*of my new field*] before pursuing a doctoral degree." Each of these survey respondents offered a reasonable and strategic explanation for the choice to delay their entry into a doctoral program.

Lastly, as part of their participation in either the Summer Pre-Graduate Research Experience (SPGRE) program or the Moore Undergraduate Research Apprentice Program (MURAP), the study participants received professional development training during the program that some clearly indicated assisted their post-program academic and career endeavors. Former participants made several positive attributions to their summer research experiences. When speaking of the overall experience several participants used terms such as amazing, awesome, enjoyable, excellent, invaluable, phenomenal, and

wonderful to describe the opportunity. These feelings are exemplified by the program

benefits shared in these four quotes: "It [*the program*] provided me with a wealth of

knowledge, skills, experiences, and support that I would not have had otherwise;" "I felt

very prepared to enter my doctoral program and was surprised at the amount of other

students from my cohort and others who also decided to pursue higher education;" "The

encouragement and camaraderie from working with other peers is invaluable and helps

create a support network that can be very beneficial as a minority seeking a doctoral

degree;" and "Though challenging, the summer program made me realize that I had the

ability to perform well in graduate school and conduct high-quality research." From these

statements, it appears that the SPGRE and MURAP programs offered a practical

developmental opportunity that was an unusual collegiate experience in which high

performing, mostly doctoral degree focused, underrepresented students could participate in

an empowering graduate school preparation and research immersion experience for

undergraduates.

Additionally, several participants attributed their decision and subsequent graduate

education success to the program when they stated the following: "[the program was] a

phenomenal program that increased my interest in graduate school," "MURAP/SPGRE

program was a great summer research opportunity that solidified my decision to attend

graduate school," and that the program "was very instrumental in helping me navigate

graduate school by exposing me to so many different issues related to graduate education"

Moreover, two students attributed their early success as young scholars to the

programs: "I was able to publish the research I conducted while in the program which I

think is what set me apart from other applicants" and "[the program] set me up with the

skills to excel during my first two years… [*allowing me*] to get a first-authored publication

out the door before completing my master's degree." While the accolades for the program

were numerous, one statement arguably best captured the essence of the programs purpose and desired outcome. Programs like SPGRE and MURAP are established to expose participants to research, encourage them to continue to graduate school and earn doctorates, and inspire then to contribute as scholars to their field and continue the cycle of developing future scholars. One participant stated:

> SPGRE and MURAP were/are wonderful programs that really gave me an advantage when applying for graduate school. I felt very prepared to enter my doctoral program and was surprised at the amount of other students from my cohort and others who also decided to pursue higher education. My cohort members are now lifelong friends and colleagues. I have kept in touch with many of them, and they continue to serve as sources of support and assist me in several aspects of my professional development…I am eternally grateful for the program and hope to participate in future programs like SPGRE and/or MURAP as a mentor or director upon completion of my Ph.D.
>
> For many of the participants, the opportunity to participate in these two summer

undergraduate research programs had a weighty effect on their choices to pursue a graduate education, as well as the ability to enter their programs with knowledge and skills to enhance their transition and potential success. While the summer programs provided pre-entry preparation, the lasting relationships that were carried forward provided more proximal support during the graduate education experience for some. It is that the next step of this study sought to explore. Next, I report on the final sample and results for the semi-structured interviews conducted will be discussed, before moving onto Chapter 5 and the discussion of the study findings, limitations, and implications.

Semi-Structured Interviews

In this section, I present the findings of the qualitative analysis derived from the individual semi-structured interviews of former interns who chose to continue their education to the level of graduate study. However, before discussing the results of the semi-structured interview, I must provide a refined description of the sample that applied to this stage of the research.

The final sample used for interview analysis was comprised of 11 former program participants who chose to enter graduate school immediately upon completion of their undergraduate degree. This group represented 33% of the participants available for interviewing, and 50% of those who entered graduate school immediately. The original intent for this study was to also interview the 11 former program participants who delayed entry into their graduate education process; however, a low response rate to requests for interviews and technical difficulties resulting in two unusable audio files resulted in more than half of the potential sample not being available for analysis. Thus, the decision was made to focus this study on those participants who entered their graduate programs immediately. Patton (2002) stated that one of the 12 characteristics of a qualitative study is emergent design flexibility in which the inquirer must be open to adapting their inquiry as situations change. Given the planned approach and the resulting participation level, adjustments were made to the study design in order to move the study forward. Of the 11 participants included in this phase of the study, all are African American women in their 20s. Three of the participants completed their undergraduate degrees at Historically Black College and Universities (HBCU) and eight at Predominately White Institutions (PWI). The first degree objective for three of the participants was a master's degree, while the degree objective for the remaining seven was a doctorate. All of the participants pursued their graduate education in the arts and humanities or social science fields. Very few STEM students completed the survey. Of those invited to participate in the interview stage of the study, none responding to the request. Additional demographic information specific to their academic pursuits was available; however, disclosure of that information may result in certain participants becoming identifiable, and thus it is not reported.

Next, the results of the data analysis are reported. From this point on the term "participant" will refer only to the female interview participants, unless stated that survey

participants are included. As stated earlier, the results are organized using the proximal influence categories identified and discussed in Chapter 2, as well as a section on the participant's general views on conducting research and research careers. While the overarching categories (i.e., proximal influences) were predetermined, within each category any sub-themes identified from the analysis are presented along with the description of the findings and examples from the student responses used to elucidate either collective or exemplary experiences. Before proceeding, it should be noted that there were not any identifiable patterns that were dependent on a participant's undergraduate school type or original degree objective. This could have been due to the smaller the lower than planned participation level in the interview stage of the study.

Academic Environment

The academic environment represents the first and an ongoing interaction for every student who attends a residential graduate program. Students must operate within both the larger academic community as well as its parts (i.e., schools, departments, programs). This is especially true for graduate students who are more directly linked to the culture of their school or departmental program. In this section, I share study participants experiences and perspectives regarding the academic environments that their graduate experiences presented. I discuss the campus at large, its associated resources, and the department or school in which the participants spend much of their time.

Participants shared three issues that included what they perceived to be the apparent focus of the universities they attended: students, the types of students, and how the campus reacted to significant issues of interest. Two of the participants' experiences on large university campuses brought both of them to the same conclusion, that their institutions were not focused on graduate students, but actually concerned with the experience of undergraduates. While one statement seemed to be a general observation,

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the second implied a connection to major revenue sports on the campus, and a school-spirit that accompanied that sport. The first participant stated, "you know I think overall, and I think everybody sort of feels this way, that the university [*location omitted*] is really geared towards the undergraduate students," indicating others felt the same. The second participant added, "It's hard because you're surrounded by this football culture, and the undergrads who are excited about it." They went on to infer that if students (e.g. graduate students) were not a part of that culture, there was not a place for them at that institution. The idea that these students were feeling alienated from the campus because they were graduate students added yet one more challenging variable to manage while attending their program. Feelings of alienation are particularly complicated when other more personal events cause one to question their place at the institution. A participant, who attended an institution that was dealing with affirmative action matters (as well as rallies and protests) during her tenure, commented:

> Well you know it did make me think, do certain people around here think that I only got to the school because of my skin color, or did I get a scholarship simply because of my skin color? Do certain people on this campus question whether I deserve to be here? But nothing more than those thoughts.

Those are significant thoughts to carry by themselves without also harboring feelings of being an outsider, or as it was put by a participant who described "feeling like a visitor" the entire time in the graduate program. A participant originally from the south spoke of their transition to a school in a northern state and the difficulty connecting with others on campus because

> as far as the personality of the people is concerned, I think the students were just a little more cold and unwelcoming than what I was used to. I think that people were just a little hesitant to get to know each other. I think folks would just rather focus on grad school.

Perceptions and experiences like these can create challenges for students simply to be on campus.

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While no connection to the feelings like those stated above were made about accessing campus resources, only a few study participants discussed taking advantage of opportunities within the larger community. Some participants mentioned attending seminars, lectures, and symposia, while another mentioned using athletic facilities. One student also discussed being part of a campus-wide program for diverse graduate students seeking to enter the professoriate after degree completion. As mentioned in chapter 2, the National Science Foundation – Alliance for Graduate Education and the Professoriate (AGEP) is one of the few federally funded university-based programs that focuses year-round on diverse graduate student retention and their preparation for becoming university professors. This study participant enthusiastically shared their views about being a part of the larger university community via that opportunity:

> I am also part of AGEP, how could I forget about AGEP. As for AGEP, when we were talking about people outside of my program [*who are sources of support*], AGEP is definitely that for me. That's the Alliance for Graduate Education and the Professoriate. They have monthly meetings called [*program title omitted*], and I participate in those. It gives us an opportunity to present [*our work*] and give feedback to other graduate students. They have regional conferences, and I've presented at regional conferences. They placed deans and professors and really close proximity to students. So I've been able to create some key relationships at [university name omitted], because of my involvement in AGEP. I've also applied for some of their grants and I've gotten them. Because of AGEP I have started mentoring a [*undergraduate research student*] that came to learn research skills. I also helped her with them with graduate applications, and she applied to [*university name omitted*], and they got in. So AGEP has been very important to me. It's for US students, and students from Puerto Rico. And even though there are also white students it's predominantly for students of color. The primary focus has been on the physical sciences, but they've done a really good job of incorporating the social sciences this year. AGEP is a very, very important network for me here.

For that study participant, the NSF-AGEP program brought them into the larger campus community and provided a valuable network. Engaging in campus activities and using campus resources can enhance one's experience while attending a degree program. While some take advantage of opportunities across campus, other students find themselves spending the majority, if not all, of their time within their departments or schools.

Three participants offered comments about their views of their graduate program environment. Two of them cited a lack of diversity within their programs as a concern. The first shared their view, but also that this view was consistent with the views of a more senior student in the program as well: 'I will say though in my program, and it was a fairly big program, I was one of the only black students in my program" and the other graduate student said, "it was hard for [them] to really connect with anyone in the lab, because there's just so few black faces that you see." The other two participants' experiences were related to classroom experiences in which perceptions shared and statements made displayed a lack of sensitivity to diverse populations, and what was taken as outright disrespect. I do not share direct quotes from these experiences as the details of the quotes are identifying and difficult to omit without losing meaning. However, in summary I share one participant's feelings about an experience of when they chose to address an insensitive and derogatory statement made by a classmate during class. They shared that they felt 'alone' after confronting the person making the statement, as neither peers, nor the professor were willing to address the matter within the classroom space. That participant went on to say that the professor approached them later to share that it was their intention to address the comment with the person who delivered it outside of class and was deciding how to address the issue with the full class in the next meeting. The participant went on to say that if it were not for that professor volunteering her perspective and plan to address the issue, returning to the class would have been difficult.

In this section, the views of study participants indicated feelings of alienation and isolation due to a university cultures that focused on undergraduate students and not graduate students. Additionally, external and internal events caused one participant to constantly reflect on whether they were considered an equal by others on campus. Feelings like this, along with limited representation of individuals from similar backgrounds and

interactions like the one mentioned previously, create challenging environments in which African American women students are expected to perform. Next, I report on the findings as they relate to the primary university officials with whom graduate students interact, the faculty.

Faculty

When discussing the topic of faculty with the interviewees, types of faculty relations were discussed across several roles. Interviewees were asked to comment on their relations with advisers (i.e., general, research), program faculty, and other faculty (i.e., faculty that were outside of their program). In some cases, programs did not assign general advisers and, therefore, the research advisor took on both the general advisor and research advisor roles. Additionally, because some of the study participants were enrolled in a master's program which can be very structured, students did not have an interaction with a formal advisor unless they conducted research, thus limiting available data for analysis with that group.

Advisors. The study participants' experiences with advisors varied significantly. When discussing their experiences, participants were asked to consider whether they were either supportive and/or challenging to their persistence in graduate school and their choice to become a researcher. When discussing the experiences, participants shared aspects of the relationship as they related to two themes *personality and character*, as well as the advisor's interest in *advisee development*. I will first discuss the participants supportive and challenging experiences as they related to the personality and character of faculty advisors, and then how faculty interact with students regarding their personal and professional development as young scholars.

Personalities and character. More than anything else, one thing that is key to a successful advisor-advisee relationship is whether personalities match well. Some of the

more successful matches pointed to advisors who were approachable and nurturing. One participant noted how her relationship with an advisor whom she worked with throughout her doctoral student tenure started off from the first day with a very positive experience.

> I remember my very first meeting with [*my adviser*]; I prepared everything so that I could start off with this is what my interests are research wise, and I'd read up on all of [*the adviser's*] research, I was coming to impress. But I remember the first conversation we had [the] first question for me was "how are you doing?" Moreover, then, "how are you settling into the city?," "how was your transition?" and that kind of stuff, and we spent an hour talking about that, and not much about research. It was so refreshing because it is such an intimidating place. Our relationship started off with me realizing that he was concerned about me!

While that participant benefited from a very personalized start to their doctoral program, other participants did not share similar first impression stories. However, they described their perceptions of current and former advisors as being "patient," "good listeners," "responsive," and "open to student ideas." Another participant discussed reoccurring interactions with their advisor in which the advisor would "just sit down with me for an hour at a time and help me work through my ideas," and that, "what I like about my advisor is that she's approachable. She is willing to help you no matter what." Similar sentiments arose in the responses of other participants about their supportive advisors. The underlying tone of the participant's comments was that they desired someone whom they felt would take the time to get to know them and be aware of their goals, which was captured in the statement "one thing that's good with my graduate advisor, I'll say, is that this is someone in the department I can actually be honest about my long-term goals with." These types of advisor-advisee experiences were desired and welcomed by the study participants, as seen in their comments.

However, not all advisor–advisee relations go well. Some of the more challenging experiences with the personality and character of advisors spanned several of the participant's stories. One participant described their experience with the first advisor as

manipulative and isolating when they shared the following, "So in hindsight, it seemed manipulative, because it comes across as [*the advisor's name*] the only person in the department that likes me," and the participant went on to say that, "it can be harmful. I literally didn't talk to some faculty in my department, because I thought they had no interest in me." This participant later changed advisors, but this experience has left a lasting negative impression. While what others' experiences were not as manipulative as the faculty advisor just discussed, other participants shared stories of perceived selfishness or unresponsiveness.

> My advisor is someone who is not always--how to put this? Being a very good advisor requires some sacrifice and the giving of one's time to write letters and read work and things like that. And so sometimes my advisor doesn't like doing things that take away from her time.

The sentiment about taking time to read work was echoed by another participant who had difficulty getting feedback on their research efforts after being with their first adviser for some time, "I would go into meetings with [*advisor's name*], and [*they*] would be like what's your research about again? And I'm thinking to myself I sent you my papers two weeks ago and you haven't read it?" For this participant, this was a reoccurring situation that continued to what was a breaking point in the relationship at a critical deadline. The disinterest in a young scholar's research is not always apparently neglectful as with the advisor just mentioned, but in the case of another participant, it was the outright disregard for their interests that created a challenge.

> As I think back, my experience with my advisor wasn't the best of experiences. She is older, [and well established in her field]. And I guess her agenda when she became my advisor was to further some research that she wasn't able to do. So even though I was clear with what I was interested in [which was different], she wanted me to use data that she had already collected, and to do research that she always wanted to do but didn't have the time to do.

As seen in the examples shared, the participants of this study placed a high value on the opportunity to connect with faculty advisors, discuss their interests, and feel secure in

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that they were being heard and supported. When this occurred strong bonds developed between advisee and advisor, but when it did not occur, participants harbored negative feelings some of which resulted in the choice to change advisors or seek support elsewhere, the latter of which is reported in the next major section on program faculty.

Advisee development. The graduate education experience differs from that of the common features of the undergraduate experience that involve primarily going to classes. For graduate students, their preparation for their career involves academic, research, and possibly social interactions with faculty. The faculty member with whom the greatest responsibility for the development of a student falls is the faculty advisor. When discussing their experiences regarding their personal and professional development, the majority of participants who had faculty advisors indicated that their experiences tended to be with advisors who were not very involved. For them, advisors handled basic duties (i.e., advisement on courses, assistance with administrative tasks related to policy), nothing more. However, a few participants offered descriptions of what they viewed as supportive experiences. These experiences included providing timely evaluative feedback, discussing career options, and creating or identifying developmental opportunities related to professional goals. As one participant described interactions with their advisor, she received important feedback on key, as well as transferrable, skills that would assist her in deciding her future profession. This participant stated, "My advisor was like, look, you have all these strengths, you're good at organizing, you could be a great administrator, you could be a great researcher, you have many skills." The participant goes on to later say "I have these insecurities from previous experiences [with another advisor] that makes me wonder if [*advisor's name*] thinks that I'm not a good writer, but I realize now that [*advisor's name*] just taking their time to read [when reviewing manuscripts] and help me grow." This was a realization that the participant found very comforting. Another

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participant reported on how her advisor seeks ways to develop their skills for future

independent research when they offer the following statement,

> The professor I'm with now does a really good job... [*professor's name*] tailors my
> experiences to what I'm interested in doing, like grant writing. So I was helping to
> support [professor's name] with grant writing, um, so generally I do think that
> [*professor's name*] helps me with whatever goals I have and getting the experience I
> need to get there [*research career*]."

Additionally, for two other participants, the development was even more personal.

They comment on how they perceived support from their advisors as recognition of the

potential for the shared lived experiences of being an African American woman in the

academy. One participant stated that their conversations explicitly included the topic of

race and gender: "She would talk to me about things that she felt I needed to know about

the field, and more specifically things about being a black woman in the field." The second

participant inferred meaning in the type of support and expectations that their advisor

exhibited towards her, and the statements that were made: "I think it's her way, well you

know it's that narrative that you might have to work twice as hard in order to be seen. The

risks are higher for a person of color especially at a PWI… when she talks to me she will be

like, I just want you to be on it [*doing your best*]." For these two participants, the

interaction with their advisors were not just a passing on of knowledge and skills training,

but also a part of the indoctrination into, and sharing of the burden placed on, this group of

women scholars, those of ethnically underrepresented backgrounds.

While several participants reported on their supportive relationships, one

participant shared their struggle with their admiration for a faculty advisor and the lack of

support they received.

> I had one advisor whom I thought was really, I mean, who is really a brilliant
> person, but I noticed that when I talk to them about my goals it kind of got lost…
> Because of that relationship; because I couldn't really grow in my area; and because

[*advisor's name*] weren't really interested in my area I ended up switching [*advisors*].

This participant desired a closer relationship with an advisor that they viewed as a highly capable scholar. However, not having their goals acknowledged and plans for development and achievement put in place, they had to seek out other resources. When initial advisement relationships fail, students must turn to other faculty in their program for guidance and potential advisement. It is this group of faculty that I will report on next.

Program faculty. This group of faculty is comprised of those who are within a student's program, but may or may not have any formal (e.g. course professor, program director) relationships with the student. As seen in the previous section advisor –advisee relationships can be tenuous at times. When students determine that they want or need additional or different support the must turn to other faculty members in their program for at least some of that support. Unlike advisor relationships that may be assigned, or occur early in a program based more on research interest than knowledge of compatibility, connections with program faculty occur through courses taken and opportunities to become more familiar with each other through things such as common interests, service work, and teaching and or research opportunities.

Participants who commented on program faculty mostly had positive views about the relations they either had established, or perceived that they could. One participant shared that the decision to seek out support was a recent activity when they shared,

> Yes, I will say that I had to turn to other faculty for different things. It's actually a lesson that I just recently learned. You can't get everything from one person. I have found that some of the junior faculty, even though they have less time, are more giving of their time. They seem to be a little more empathetic, maybe because they're a little closer to where I am so they realize that you need help.

Whereas another somewhat echoed the sentiment of needing others when they shared that they had built a stronger bond with a faculty member other than their advisor.

There was one faculty member in particular that I really bonded with, and I ended up being a lot closer to her that my advisor. I did, because she really seemed to listen to what I was saying, and she would give advice. For example, she would suggest that I take the data that the advisor wanted me to work with and try to ask questions that were more in line with what I was interested in so that I could get a little of what I wanted.

The opportunity to connect with program faculty for the most part can be a positive experience. Any faculty that one does not desire to connect with can be avoided, short of with coursework, which limits the potential for undesired interactions. However, there is one situation in which interacting with supportive program faculty can possible take a downturn, thus presenting an immediate (i.e. limited advisement from faculty) and a potential (i.e. limited access to faculty) challenge for students. Whether it is a student's advisor or the general program faculty, two study participants shared the view that discussing personal career goals with these individuals was not a good idea if the career goal did not involve becoming a research professor. One of them commented on the possibility of remaining in higher education but not focusing on research:

You know like, oh my gosh, what if I actually considered going to teach at a community college. I know I can't say that to them and I know that they won't look at me like I've lost my mind... I think that if I went to my advisor with that, it would have to be something that I have really thought through, and then go to her and say this is a decision that I've made.

When one is faced with limited options for discussing their personal and professional goals with faculty connected their program, especially when the goals may not align with the vision those faculty have for their students, seeking advice from incumbents outside of the program can become vital resources. I report on the participant's views on accessing faculty outside of their programs next.

Other faculty. When students are not able to have their needs met within their program faculty, then faculty who are not affiliated with their program can offer alternatives for establishing a supportive faculty network. Understanding that connecting

with a broad spectrum of faculty is an option, and possibly advantageous to one's graduate

education can be elusive to students. In my experience programs are known to encourage

students to rely solely on program administration and faculty for their needs. However,

this is often unrealistic given the needs of diverse students. When discussing whether they

were utilizing faculty outside of their program study participant stated, "oh yes for sure.

[*There was a talk I attended*] about having multiple mentors for everything that you do and

everything that you need… this was something I was already doing, and didn't realize it."

The participant went on to discuss a variety of relationships that they had established

across various programs at their university. Some of these relationship resulted in

opportunities to conduct research, while others took on a collegial nature. The need for

students to identify multiple sources of support that can provide diverse perspectives on

decisions that need to be made is exemplified in the experience of the next participant.

This participant received disheartening feedback from an influential faculty member, which

was countered by the feedback from others. They stated:

> So I did have a combination of individuals who gave me really good support, and
> then one person who basically said I shouldn't apply to another graduate program
> [*at that time*]. I don't think she meant it in a negative way, I think I took it as
> maybe she meant that I should wait until my research interest developed a little bit
> more. I think she meant well, but she wasn't necessarily as supportive of the idea.

After receiving this feedback, the participant sought out the advice of other faculty who

were more encouraging. They then applied to and subsequently entered a doctoral

program. The influence on a student trajectory by one individual can be great, when

students do not make connections with other faculty, and seek their input as well; they

limit their ability to make informed decisions.

Seeking faculty connections outside one's program affords other advantages as well.

Connecting with faculty of similar ethnic and or gender backgrounds can be a need for some

students. This participant offered the following statement about faculty from various

underrepresented backgrounds that were outside of the participant's home department:

> Okay, so I will talk about this in regards to people who are completely out of my
> department. These people have been lifesavers! Because opportunities are so limited
> in my department, both academically and socially, I have gotten funding
> opportunities out of the college of education. Also, there are more faculty members of
> color [*outside of the* department]. They are all hard-working professors, but they
> genuinely are concerned with students.

However, these supporters do not necessarily have to be at one's institution. One

participant shared that they were still in contact with faculty at their undergrad

institution: "and then there are mentors from my undergrad, with one in particular.

[*Faculty member's name*] was actually the first person who ever sent me to a conference…

and supported several of my undergraduate research activities."

Summary. In this section, I reported on study participants experiences and

perspectives on interacting with university faculty. As seen by the accounts, relationships

with faculty can be both supportive and challenging. The need for identifying multiple

faculty resources both inside and outside of one's program for guidance and support has the

potential for making the graduate education experience more manageable. However, the

advisor-advisee relationship can be the most challenging to manage. When these

relationships are going well, students can flourish, but when there are difficulties, the

sooner that solutions, or an informed determination that a change is necessary can be made

the sooner the student can get back to pursuing their goals. While faculty are a critical

segment of the academic community, there are other relationships that also play a role in a

student's experience and potentially their success. Peers within the academic community,

as well outside of it can be sources of both support and stressors. Experiences and views

regarding those various individuals are reported on in the next section.

Peers

For this study, peers were individuals both internal and external to the academic setting with whom a participant may have established or chose to establish friendships or otherwise interact with. As graduate education is at least in part a training ground for specialized careers, one can find themselves amongst friends or simply the competition whereas outside of the academic setting peers can take on a different roles that are not competitive and more supportive. In this section, I report on the perspectives and experiences of the study participants as they relate to four types: program, school, hometown, and community peers.

Program peers. Program peers are those within one's specific or affiliated graduate program. As some programs are organized with other programs within university schools (i.e., School of Education), for the purpose of this study, program peers are those individuals studying at the same or higher level within those same organized spaces. Short of attending a university at which one already has established friendships, one's program peers represent the first opportunity to interact and establish relationships within the academic setting. For the study participants, those early connections were positive and for some lasting. One participant commented about their arrival and the benefits of building an ongoing relationship with their cohort:

> I came in with a cohort of about 13. One thing that I did find was that it was very helpful to have a cohort of people. Having people that you could go through the basic course work with, and provide moral support, you know, when you get discouraged, and things are overwhelming. And now that I have reached the dissertation process, it's still helpful that I maintain relationships with several of those individuals. Help in the sense of, hey do you have code for this particular analysis? I am having trouble thinking through and conceptualizing this idea can I talk it through with you. Or am thinking about these questions for my dissertation research, can you talk about it with me?

A second participant offered their early experience with a program peer who was a more

advanced student in the program. The benefit of drawing on the experience of a more

advanced student is apparent in the following statement.

> I remember when I was a first year and another student was a third-year, the student sat me down and told me these the classes you need to take, this is what you need to do, this is how you survive. If you want a TA for the class you need to e-mail the professor right now, and I got that kind of tangible advice. And I, you know, read people's drafts of dissertations, and sat it on their practices for the defense. And I've also talked next steps with peers because our department has a broad spectrum of individuals studying within it. Some will go into policy, others research, and others academia.

When speaking with study participants about whether there were challenges when

interacting with program peers, there were only few comments. For the most part, the

study participants either had good relationships with their program peers or they discussed

the competitive nature of the graduate programs. The only additional issue that arose was

discussed in the section on academic environment, in which classmates occasionally made

insensitive comments. Thus, related to the topic of competition, a participant offered their

experience as one that showed it is not always something that is experienced from the first

days of a program:

> Okay, I have to note that some of the relationship started off supportive, and then became challenging. So my cohort, I believe there were eight of us and it was very heavy female, I think there were only two or three guys. One of my friends really made it a point to make sure that all of the females got together. We had study group, worked on the readings together. It was really good, that first year. I think we did a really good job of hanging out and being supportive. Focusing on work, but also being supportive of each other. Everyone for the most part saw it as we are one school, and I think that that's how later on things became just a little less supportive. In year two, is when you [members of the cohort] begin to realize that you are all applying for some of the same fellowships and grant opportunities. So I think by year two it wasn't the same supportive environment that we came into in year one. I think it was the cohort that was in year four or five, which became very close for me at that point.

That sentiment of rising, or in other cases ever existent, competition was shared by several

study participants. Another participant shared advice they received from a faculty mentor,

"Now you know you can't share all your business with everybody, right? Not everyone can be trusted with your ideas." That participant took that to heart, and made it a rule for engaging individuals in their department. For them, interaction with program peers, with few exceptions, was limited:

> I have [number omitted] white, female friends in [my department] who I feel like I can have conversations with about being a black woman, or conversations about not having the support that I need, and trying to navigate those things. And they seem to get it. But other people in the department, I really don't want to talk to them about anything other than, "hi, how was your day?"

Interactions with program peers varied for these participants. Some participants shared that they had wide interaction with program peers, while others had more limited experiences. For the most part, program peers were a source of support for those who established the relationships. However, graduate programs are known to be spaces that can foster competition, and the experiences of these study participants were no different. While one cannot choose their program peers, another peer group that can offer similar benefits with less of the challenges are school peers. The results related to this group will be reported next.

Outside of program peers. For graduate students, the choice to interact with individuals outside of their program can have benefits. For the participants in this study, the benefits took the form of both academic and social support. It also offered them an opportunity to connect with individuals of the same ethnic background. One participant made it very clear that the opportunity to connect with other Black graduate students was an important opportunity.

> Yes, supportive. With them it goes beyond just being in the experience of being graduate students, it's also the experience of being black graduate students, or black women graduate students. The process of trying to navigate graduate school, when you are one of a few. So it's definitely helpful with that.

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Along with connecting with individuals who can identify with the lived experience of being a Black graduate student, making connections with individuals from other programs can help one keep perspective when things within their program become difficult. The same participant who offered the quote above goes on to share that those connections allow for them to hear about the challenges others are having as well:

> It's also helpful in making me realize that the grass isn't always greener on the other side. Sometimes when you start a graduate program you start thinking about, oh my gosh I wonder if it would have been better for me to have gone to this other program. But you find out that most places have very similar issues. So it's a good way of getting your perspective. And sometimes you may or realize that where I am is not as bad as where some of the other folks are.

> However, the connections are not just about sharing and noting experiences.

Critical academic support can come from these connections. One participant shared that receiving encouragement from peers who were in the class helped them to engage more and balance perceptions of the experience:

> I would say that the individuals who are actually my friends, this is not necessarily academic peers, and are a source of support when in class. When I came in from undergrad, it was pretty overwhelming, I'm talking about the coursework. Especially going straight into a class with a big-name person, and you have all these people sitting around trying to sound real smart for this person. And so I'd sit there, and sit there and think am I really supposed to be there in this class. So people that were actually my friends, and were the people that would tell me that when we were talking, there was something that I should say in class next time because "that's such a great idea." This is versus the peers in class which often felt like the one-upmanship. Sort of like they were thinking my purpose is to make myself look good, and if that makes other people look bad then so be it.

Additionally, school peers allow individuals to connect with like-minded people seeking to both receive and provide accountability for each other's goal pursuits.

> In terms of the campus in general, I don't know if it's the university that's done this or that its students that have chosen to come together and make this happen, but there are things like every Saturday the graduate students go to a place on campus and write for however long you want to stay there. When you go you write your goals on the board, and it's really a supportive and encouraging group.

Ultimately, the opportunity to connect with individuals of similar backgrounds was a reoccurring theme when it came to meeting people outside of one's department. Through personal connections, organizations, work, and social opportunities several students sought and benefited from connections that made their experience better. For those that were able to do so, they spoke of personal and academic support and that they were thankful to have it. One participant offered this perspective on how important school peers are to them:

> Okay so I will talk about this in regards to people who are completely out of my department. These people have been lifesavers! … And a lot of my friends have come from the college of education, you know, by working with them over the past few years. I am also very active in the Black Graduate Students Organization. Most of the people who are outside of my department are people I socialize with, and express things to that I can't always express to people in my program. But for the most part they are my support system.

However, while desiring the connection, one participant offered a reason for not taking advantage of one resource that would have given them the opportunity to interact with students from across campus:

> When I first got here for orientation, I remember talking about different organizations like the black graduate students [*with graduate students*]. I didn't really get involved with any organizations because it sort of seemed like if you went to any meetings they were going to sign you up for three different committees or activities, and I was just like no I can't afford to commit to that. So, [laughing] the networks were there.

Given that several participants indicated that they did not have school peers with whom they interacted with, this sentiment of protecting one's time offers a possible explanation. However, for those who chose to connect with individuals and groups outside of their program, the opportunities appeared to be both enjoyable and useful. The relationships with peers on campus are important for various reasons, but there are other peers that individuals have that will be discussed next. First, experiences and perspectives on hometown peers will be discussed, and then lastly community peers.

Hometown peers. For many people, going to college and graduate school can mean moving away from one's hometown. The decision to advance one's education comes at the potential cost of lost communication as life trajectories with some friends diverge. However, when time permits and geography can be traversed, hometown friends can be a source of support with few challenges if any. For the participants in this study, these circumstances held true. While a couple of participants indicated that they had no contact with hometown friends, several others indicated that they had at least some contact from year to year, including connecting when visiting home, in their new hometowns, or in convergent locations while traveling. One participant spoke of connecting with hometown friends and the moral support they receive while also sharing that they recognize differences in lifestyle.

> In general my friends from home are on a different life path. Friends at home who haven't continued school, then they have kids, then they're already in the job market, doing things completely different from academia. And so, I mean, they are supportive, but they can only be so supportive. They don't understand my lifestyle now, and I don't completely understand theirs. So, I guess the support is there in this sense that I know when I go home I will always have someone who is generally proud of me.

Despite the differences in life paths, efforts are made by friends to understand the experiences of the participants. One participant discussed explaining to a friend who did not finish undergraduate education the process of earning a doctorate. For several participants, the lack of understanding of the graduate experience was secondary to the opportunity to connect with old friends. A trip home and an opportunity to connect with people outside of the academy and in the larger world provided the participant with an escape to something familiar and comforting. When speaking about the lack of understanding, this participant shared: "They are helpful I guess in say, pulling you away from that [the academy, research] and kind of reminding you that there is a world outside

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of graduate school. That you are a part of that world, even if it seems like a really long time ago."

While all of the participants stated that there were not any challenges to being connected with hometown friends, the one reoccurring point was that many friends from home had little understanding of the demanding lifestyle of graduate students, and or the purpose of pursuing and obtaining that level of education. However, this was not a divide that could not be traversed, and the benefits of reconnecting with a life left behind far outweighed the alternative. It should be noted that a few of the participants did mention that social media technology like Facebook did help to bridge distance and allowed for less of a divide. A final quote from one participant echoes the need for personally reconnecting, shared with other participants, as well as the benefit of social media:

> It is in part like having exposure to each other, having that little window into each other's lives. I think that that's the main thing. Going home is important. It's kind of like this cultural thing of being in the space, being in a university, where you have to perform your identity in a particular way. So when I go home I can be off in a way that I can't be here. So I get to kind of just be relaxed, a little more relaxed, when I go home. And that support that they offer me isn't offered up here. I'm from a working-class background and very proud of it.

Community peers. For the majority of the interview participants, a connection with the community was non-existent or very limited, which will be discussed later in this chapter. However, for a few participants, a smaller segment of community, friends living in the communities adjacent to their university, were another source of support. While two of the participants commented that a similar disconnect as experienced with hometown peers existed with their community peers around lacking understanding of the graduate student experience, one participant spoke with enthusiasm about a different experience:

> I think that this area is unique in that, even if you're not a researcher you're connected to researchers. So some of my friends who are not academics, like [identifying information removed], I worked on their [community] research project. We've written papers together, even though he's not an academic.

For the other two participants, despite the disconnect in being fully understood by their community peers, both shared their feelings that a lack of understanding was less of an issue than the benefits of having these established connections. Community peers at the very least made them feel supported. This is apparent, in the following statements. The first participant shared:

> For community peers it was sort of the same thing. Everybody was very proud that I was pursuing higher education in getting my Masters. But at the same time very few of them were going through that, or had ever gone through that, so again they didn't quite understand what I was going through.

And a second offered this statement:

> Oh yeah, definitely-definitely, they were the ones that were encouraging me to push through. My last semester was kind of crazy because my advisor had a major [life event and wasn't available to me], it was a very stressful time for me. Again the outside folks didn't understand the process of collecting data or running data analyses, and all that other fun stuff associated. But they were still very supportive, and they would listen to what I had to say and would just encourage me to continue and complete the program.

As seen by these examples, community peers, in some cases may be limited in their ability to empathize and/or offer experiential advice to individuals like the participants of this study. However, this is not true in every case. Later I discuss connections with the community in a more organized manner, and the context of interacting with churches will be discussed. That community space is one that offers an opportunity to connect with others similar in age, which several of the participants do take advantage of despite not mentioning those connections in relation to peers.

Summary. In this section, the result of the participant's views of their interactions with program, school, hometown, and community peers were reported. Across groups, examples of support could be found for those participants who chose to interact with their peers. However, one challenge was raised about interacting with program peers. A sense of competition was present for some that diminished the positive potential of those

relationships. As for peers outside of the academy, the challenge that arose, but was not viewed as such, was that many hometown and community peers were not able to identify with the experience of being a graduate student. However, as previously stated, positive support was experienced with this group in the sense that in all accounts moral support and pride was abundantly available. Next, I will present the result of analysis for the professional networks groups.

Professional Networks

In the last section I provided the results on academic peers along with peers that are external to the academy. In this section, I report on a resource that is available to individuals that merges the academic with the external characteristics of the previous section. Professional networks represent a source of peers, colleagues, and potential mentors for graduate students and new professionals. For this group, four themes were identified: individualized attention, supporting activities, future participation, and social-networking

Individualized attention. For graduate students, the realization of the often unspoken expectation that one will go out and make connections with professionals in their field can be daunting. Feelings of lack of readiness may take over. Yet for some, the right first connection can open doors to new ones. "My mentor [name omitted] really, really, encouraged me to apply, and apply for fellowships, and so she's been involved in helping me get to know people within my field. With people who are mentors to her, and other people that she generally feels I should know." That kind of engagement from a mentor is ideal when attempting to make connections. However, it is as ideal, as it is rare. For most graduate students, the degree of effort on the part of their faculty advisor will most likely be more reserved. The comment from the next participant, speaks to how differences in assistance may arise.

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There are some faculty members who, particularly if they're on your dissertation committee or something like that, if they're at a conference, in a way that a good mentor does, they will introduce you to their networks. But for the most part faculty will tell you should join a particular professional organization or attend a conference, but there isn't much encouragement or interactions beyond that.

While some faculty mentors may seek out a student regardless of an exhibited need or a formal connection with the student and provide support and guidance, other's may choose to offer access to them only if there is some degree of formal connection to the student; and yet there are others who without formal connections, but simply on a general feeling that a person is worthy of support and guidance then attempt to make a connection. Now this may take a particular type of personality to attract this attention, but the message offered by this next participant shows that it is possible to make connections by just being yourself and sharing your passion for what you do with others:

Yes. I think that there are people who see that I'm a person who enjoys academia, even though I have some doubts at times I love what I do, I love research, teaching, going to conferences and workshops. I love it, and I think it's great, and think people see that energy from me and they want help me. And I'm also willing to do things for them, like reviewing a paper or something.

Three scenarios are offered by study participants, each of which supports the goal of making connections. However, if one were to find themselves not experiencing any of these, there are still other ways to build one's network and it involves being the right places.

Supporting activities. The opportunities to connect with like-minded people are available. Sometimes you are invited to them, and at other times individuals must seek them out. One type of opportunity that students should consider are campus-based programs set up for graduate students to gain professional development and make supportive connections. For two study participants, these types of programs not only were available during graduate school, but some of them specifically sited their experiences in the SPGRE and MURAP programs as undergrads as one of their first opportunities to begin

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to build their lifelong professional network and connect to other support programs. The

first participant shared the following,

> Well, there are different opportunities, well let me step back. When I first got here I was a part of a program supported by the federal government established to support diversity in graduate education. So I was in it for the first two years, they had different workshops on things how to write a paper, etc. and they brought faculty and from different schools and from the school, and they try to get you connected. Through that program I met a faculty member who assisted in the same types of research that I was, and I was able to keep up with her. That was helpful in just moving my research along.

The second participant offered this statement:

> So this is going to go back to the part [in the interview] on SPGRE. So after making connections while in SPGRE, that connected me to AGEP [Alliance for Graduate Education and the Professoriate] and they gave me money to do research the summer before I started my PhD program, basically a head start. Throughout my program they have funded me to go to conferences including Preparing Future Faculty, and so those conferences that are geared towards helping minority PhD's understand the ins and outs of getting faculty position, and the tenure process has been very helpful. Hearing from academics and social scientists, and administrators, who have been through all these things we were experiencing and give advice on what they did to balance career and family was invaluable.

While developmental conferences provide a safe space to meet career-field

incumbents and others who are ready to assist you, the more common opportunity for most

graduate students is the professional conference. However, attending conferences can come

with challenges. As will be stated later in the chapter on the topic of financial

considerations, graduate students do not always have the means. Yet, when they do, either

through their own means or sponsorship, there can be another obstacle. While a

participant commented on how their faculty member pushed them to attend conferences

and meet people, other faculty have different views. Sentiments of faculty not being

encouraging and, in some cases, outright discouraging conference attendance are partially

captured in this next two comments:

> They don't not really support them [conferences], you know they kind of say that it's a good idea. [But when at a conference] I can't think of an instance where they said "well you need to know so-and-so" and then introduced me. I know other mentors

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that are better about how to make sure that their students go to certain conferences and things like that, and which I think that would be a good networking opportunity. Although, I do go to a bunch of conferences, and meet a lot of people and sometimes I feel like I don't really get to know anybody, and then the time and money it takes to facilitate those connections. A lot of it is self-directed, the faculty aren't always aware or explicit about that being important.

Another participant stated:

They'll give you information on how to do it [network], but I don't see them taking the time to personally help you make those connections. They don't take that step within my faculty, and I have think about that. So again that is something that my program is lacking. They don't even believe in conferences per se, and I've heard students say that they've had faculty tell them that conferences are a waste of time. You should be focused on publishing papers, and research. And going to conferences, even if you're presenting a poster or something isn't the best use of your time.

Despite discouragement for some participants, others commented on being very active participants in conferences and reaping the benefits of attendance. One participant offered the following comment about meeting up with their SPGRE/MURAP mentor at conferences now that they are a graduate student, and what it means to them, "They're always excited to hear what I'm doing, when I see her at conferences. I generally feel like she's my first mentor. So I'm grateful that the program hooked me up with her." This type of experience is in part what conference are for, an opportunity to reconnect with colleagues and mentors. Moreover, conferences are the space in which budding scholars have an opportunity to share their early work and make connections through shared interests as this next study participant shared:

So I guess the other way, is when I go to a conference and do a roundtable, someone may say hey I know somebody who would be interested in that, and they'll share their information with me and then I will end up meeting that person. So there some branching out because you know there are people that will just say let me introduce you to this person. And that's helpful, because if it was up to me to just go out and find people and meet people, it probably wouldn't work out so well, because I don't like doing that. So I think my network has mainly been formed between the summer research program, and people introducing me to people that they know.

Future participation. One benefit of connecting with professional organizations and attending conferences is that these entities and events need individuals to take on

leadership roles, as well as carry out tasks. This work is considered service to one's field, and can be an excellent way to make contributions while also making connections. While many responses to the question about future participation were simply answered with short affirming statements, this comment was offered as it relates to being actively involved in one's professional field in the future:

> It's something that you have to do, it's an expectation of the service part of academia. Which I think is ironic, because I think it should be service to community. So, I know I'll probably do some sort of officer position within [organization name omitted], they have subsections, all these different groups, where you can become the officer and do the work of the organization.

While this participant placed the qualifier of this type of activity being necessary for working in academia, there are other benefits to participating in ones' field even for those who may work outside of the academy. With all of these opportunities for face-to-face interactions, one more recent development in society continues to change the way people connect, and it can work just as easily for those who are outgoing, as it can for those who may be more reserved.

Social networking. Social networking has received overwhelming acceptance over the last decade. Services such as Facebook, Twitter, and others provide individuals an opportunity to connect with people from all over the world. Participant comments about using the social networking site Facebook ranged from being able to stay connected with hometown friends, to having a service that can just as easily connect them to individuals in their professional field or with similar research interests with the click of a keyword link. Aside from the comments regarding connecting to friends, one participant shared a comment about how they connected with someone via a different social networking service Twitter. Despite being thousands of miles away in South Africa, the two of them connected unexpectedly in the United States:

I've met other academics on twitter and then we meet at conferences. I met one researcher who lives in South Africa, and she and I met on twitter. We were both attending a conference and tweeting about our experiences when we realized that we were tweeting about the same event. We quickly made arrangements and were able to get together!

Summary. For the participants in this study that activity and results of building professional networks varied. Four themes were identified during the analyses that included individualized attention, supporting activities, future participation, and the benefits of social networking. While some benefited from strong networks, others received mixed messages about the importance of doing so while in graduate school, and yet others despite being aware of the importance had not started working to build their network. Given that professional networks afford individuals an opportunity to not only make potentially supportive connections, but also expose them to greater options and opportunities there is a need for individuals to increase and expand their activities in order to better support their goals. The one participant who was heavily engaged with social networking services was able to expand both her personal and professional network internationally, while others benefited to a lesser degree using services to more specifically to maintain more personal connections.

Community

As it was introduced earlier in this chapter when participants began to make comments about the environment and peers, connections with people outside of the academic setting can be sources of support. For the participants in this study, connection to community ranged from non-existent to heavily involved. In the case of those who reported not having any connection to community, it was often a conscious decision, to protect their time. As for others, the activity that had the highest frequency was involvement in church. For these three participants their involvement in church was a source of support and an opportunity to give back to the community. The first participant shared:

Like my church family, when I was applying to my doctoral program, and even when I was applying to my Master's program, you know, they wanted to write letters from church leadership. And they would tell me how they would pray for me when I had tests coming up. So very helpful.

The following was added by a second participant:

Well, this one in particular is a biweekly group that meets for two hours. It's a fellowship and learning type of thing. I have also had, earlier on; I was with another group of women in Bible study. Some of those women were from school, and some of them were not. In terms of other organizations I haven't really connected with others, I haven't connected with my sorority. Most of the connections have been with your church.

And last, a third participant commented that "I was involved with the local church and through the local church I was involved in some community organizations that I volunteered with, so that was it."

For the other participants, their connection to the community included other options even if they also included church. This participant, unlike one above, chose to be involved with their sorority while in graduate school. For them, it affords opportunities to network and gain support from sorority sisters on campus, as well as connect the area community for volunteer opportunities:

I'm a member of [sorority name]; this connects me to other sisters like undergrads, as well as academics, and other administrators... And church, because I [am involved with the church], they want to help you with your career because they won't keep you. I mean literally after church I'm asked what can I do to keep you here, what type of job do you need?

That connection with others who were not academics was a reoccurring theme for many. Two participants shared their reasons for making sure they spent time in the communities adjacent to their graduate institutions:

For me I looked at it as an outlet. It was a way for me to be connected to my community and give back. So I wasn't going there for support, to talk about me, as much as it was for giving back in working with people outside of academia.

Additionally, another participant added that:

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I very intentionally and specifically moved to "the hood" [near my school]. It's very small. I find the appearance of the class differences and race differences about where people live very interesting. So I live in a proper, working-class immigrant, it's a very working-class diverse area. And I had to do that because I need a place to be off. Because being in graduate school requires, in my opinion a particular cultural capital, so I can play the middle class cultural capital gain, but it's not my comfort zone. So it can become extremely stressful to have to work in that environment, but then also have to live in that environment. So when I'm technically off and I'm at the grocery store, the gas station, if I'm seeing a student or faculty member that reminds me of that place, so for that reason I had to move away from that space. So at least I know I'm going home to something that feels just a little bit more familiar.

For study participants, the act of connecting with their community was more than just an activity, it was a need that could not be fulfilled through any program or opportunity on campus. They needed to connect with, as the last participant's comment stated, a place that is "familiar." In the next section, I report on the influence of financing one's education and the effects on career choice.

Family

The influence of family can have a significant effect on an individual's decisions in life. It has been reported that family connections influence student persistence, and possibly career choice (Baird, 1990; Boulder, 2010; Hamilton, 1998; Stage & Maple, 1996). In this study, family is comprised of parents, siblings, and when applicable a significant other (i.e., boyfriend, girlfriend, husband, wife). For the participants of this study, the responses to the various subgroups were categorized by four themes, early encouragement, moral support, lack of understanding of graduate education and research careers, and shared experiences with higher education. The latter two groups do not include the theme early encouragement. It should be noted that results related to one additional theme, financial support, is reported in the results section on financial considerations.

Parents. For many of the participants of this study, their attendance in college and even in graduate education was encouraged from early in their life. With some participants being first-generation college students and others being the children of one or more college-

educated parent, regardless of educational background the goal of participation in higher education was clear. One participant discussed how both parents had completed high school, with one going on to vocational school afterwards, and then shared, "So they were very excited when I went to undergrad, and they were very excited when I decided I was going to go to graduate school. They were never the types of parents that were questioning, you know, all of the schooling." The spirit of excitement in this comment was also mirrored in comment of a participant whose parents both hold post-graduate degrees:

> They are both excited for me. My dad especially, has been the big proponent of education, and my mom, as well. So, let's see, well you know I did come from a background in which education was valued. Both my parents have [*professional degrees*], so they got higher level education. So I think that's what kind of set me up to pursue my education, that expectation for myself, and knowing that it's possible.

Similar sentiments about the valuing education and expectations being established were present in other participant's comments as well, with one participant sharing that the expectation was not just for college attendance, but among her siblings they were the one who was expected to not just attend graduate school, but earn a doctorate: "I think in my family, and extended family, it was always an expectation that I would be the one to get a graduate degree, and so there was concern that it was only a Master's and not a PhD." Only one participant shared that they did not think that their parents were concerned with whether they attended college or not. The majority of the study participants had early and consistent encouragements to consider higher education.

As stated the encouragement for many has been consistent, and naturally this has extended into the college and graduate school years. Participants reported that they felt they could contact parents for moral support at any time, but aside from contacting them during times of need, these participants went through their days knowing that there was a pride that was felt in regards to their achievements:

I'm the only one [*of siblings*] that graduated from undergrad. And so for them, they were very happy and excited about it. Both my parents have always been supportive throughout my entire life. Always bragging about my accomplishments, right through the whole wall of awards thing… When I graduated from undergrad my mother put a picture of me up on in my cap and gown and a banner saying congratulations, And when I got my Masters she put that picture up next to the other one with a message saying congratulations and good luck going forward.

Whereas, that participant seemed to manage the attention well, another participant joked about how the pride that came with the readiness to support was sometimes embarrassing:

Both are very supportive. They always felt that we should always do what we are passionate about. I'm the oldest. They are very proud of course. My dad, of course, is especially. Sometimes I have to tell him, daddy, just hush, yes I'm just in grad school [laughing].

Although, the support reported was always meant to be uplifting, it did not mean that there wasn't a degree of seriousness behind the message. Two of the participants shared that they had a parent that were seriously ill, and while for this one participant the message was supportive, the message also came with a directive and associated sacrifices when their mother reminded them to focus on school and not on the mother's illness: "Meanwhile she's telling me I don't care what happens in life, you're finishing this PhD. That is exactly what I want you to do; that is your goal. So she's like my motivation also."

Additionally, the general support received from parents and siblings while appreciated did not always come with an understanding of what the task of pursuing an undergraduate and now graduate degree meant. For those participants whose parents did not attend college, short statements were given to indicate that for some, they felt disconnected from family in regards to what could be shared about the challenges faced while in their program. However, one participant spoke at length about the challenge of the reality of being a first-generation college and graduate education student and with it, the challenge of family perceptions:

I think you know, they are generally proud, but I realized my mom doesn't perceive my being in school still as being an adult. So even though I'm a grad student, I'm getting all of this experience, world experience, the view of me still of being in school kind of minimizes my adulthood. Sometimes that works in my favor, and sometimes it doesn't. As for my dad, he's like why are you still in school? What is it that you still have to do? Why do you still have to be in school? But for him I think it's just general inquiry, you know, people just don't know what you do in a PhD program. It doesn't make sense to a lot of people.

The participant goes on to say that once they made an attempt to help their father understand by offering an analogy that did not work:

So I'll explain to him how the job market works, and tenure works in the academy. I try to tell him that tenure is like seniority, he was a plant worker so he understands seniority, but I told him everybody doesn't just gain seniority based on number of years, so you don't just get tenure just like after a certain number of years. It's possible that they can let you go, or you can leave, and so we are having this conversation about whether becoming a professor is kind of like you know having a contract. So you don't really know if you will keep the job that you're contracted for. So we had that conversation, he was really like I don't get it, it's not even for certain that you will keep this position.

The challenge of helping parents understand something that they have not experienced (i.e., higher education) can be daunting. As I reported earlier, for several of the study participants, that was their reality—the choice to either try to explain the experience of higher education, or to not do so; and, in either instance, to be satisfied with the moral support they may receive. However, the reality of parents who are not familiar with higher education is not everyone's experience. Some of the study participants come from families in which at least one parent holds a college degree, and in some cases both parents hold advanced college degrees. For them, the shared experience of higher education creates an opportunity to discuss challenges, and gives them access to a different type of as well. One participant simply shared the following to explain the resource they had available to them, "my mom has a [*discipline omitted*] degree, and recently got a Master's. My dad has a bachelor's, Master's, and doctoral degree in his field. So they know all about post-undergrad work."

However, while that participant came from a family that understood post-graduate work, there were others that were even more steeped in educational attainment. Several of the participants, shared that they were third generation graduate students, two of which had grandparents who held doctoral degrees. They had decades of familiarity with higher education at their disposal. One participant shared that she would call her grandmother, who held a doctorate, on occasion to get insight on managing faculty relations. A second participant offered a perspective on a different need being met when she shared what she was able to gain from their mother's experience: "That's another characteristic of my family, in that the women have had higher education. And so she's been able to help me navigate that, in a way that I know other people don't have that resource." Although, being able to draw on experience provides access to a cultural capital[11] that is rare and valuable to African American female students, the access to that capital did not end at solving problems. For two participants, their mothers provided research support in the form of reviewing and editing their dissertations. One participant joked about how this beneficial service has prompted her to give her mother an unofficial place on her dissertation committee: "She's almost like another committee member on my dissertation, she reads all of my drafts. We laugh, because I tell her she really is my sixth committee member."

As reported, for study participants, their experiences with parents varied. Almost all of the participants received encouragement to advance their education to the college and graduate school level. All enjoyed moral support while pursuing their degrees, and some benefited from having parents, and even grandparents who had attended graduate school. However, there are some participants who did not enjoy the benefit of having parents with college educations. The next group to be reported on is siblings.

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[11] Cultural Capital is a concept that was advanced by Bourdieu (1973) in which he discussed non-financial social assets such as education

Siblings. For study participants, the relationships with siblings varied. While some siblings had not attended college, others were working on doctoral degrees. Moreover, while I did not collect age information on the participants or their siblings, from comments made it can be inferred that siblings ranged in age from 5-10 years younger to possibly as much as 25 years older. Almost all of the study participants indicated that they had siblings and for the most part all of the relationships being described as morally supportive. However, for a few, the interactions with their siblings were reported as limited either due to age differences, distance, and or in two cases a lack of understanding of collegiate life. For those who faced a lack of understanding of collegiate life, one participant shared that despite moral and financial support that one of their relationship with their sister was challenging in they were not taken seriously by that sibling:

> She doesn't always take my feedback seriously because she doesn't know the type of research that I've done. Because in her mind a PhD, I think me earning a PhD doesn't translate for her. I think she just thinks I'm still in college. So for me, that's not supportive, I mean it's one thing if your parents sort of do that to you but for sibling to do it just creates a barrier.
> Those sentiments represent the most challenging of relationships, for others whom

siblings didn't attend college the challenge was more benign:

> They are supportive, though they probably have even less of an understanding than my hometown peers. This is because they didn't even go to undergrad. So there is no prior knowledge to try to understand it. They probably have no idea in the world what I'm studying. They just know that I've been in school forever, and at some point I will finally graduate. And then they probably think I'm going to be making a bunch of money…So I don't regularly have conversations about what's going on in graduate school. I don't even bother to try to explain any of that... Because it would just really be lost.

The relationships with siblings who are not familiar with higher education can clearly be challenging. Conversely, for those who have siblings who do understand the collegiate context, the reports were mixed. Several participants indicated that while they had siblings with college degrees, they too did not communicate with them as much because they had not attended the doctoral level of study. A participant shared:

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I have a brother who's on the [the other US] Coast, who is supportive, but at the level of like my hometown friends, because he doesn't understand the ins and outs of what it means to earn a PhD, or what I can do with it. But I'm not really in contact with him, maybe every month or two.

Lastly, while some relationships with siblings had obstacles to connecting or were outright challenging, other participants enjoyed both supportive and inspirational relationships. For several participants, having younger siblings who looked up to them with pride gave them purpose for setting a good example which they felt was appreciated. When talking about whether they share their thoughts on research careers, one participant stated,:

So I think again it's not so much about research per se, as much as it is about following your passion. Really finding what it is that you want to do and being sure that you can optimize your possibilities when you're done. They kind of tease me, and remind me that I'm the oldest and that they want to make their own kind of footsteps. We're all very independent but in a supportive way not a "you know I don't want to do that" way. We just try to be supportive of each other.

And for one participant, the benefit of having a sibling who was also conducting doctoral level study provided a connection unlike any other participant's, and the direct benefits are apparent:

My brother and I check in with each other every week, and we actually talk almost every day. But we make it a point to check in with each other no less than every week. Asking questions such as, what's your progress? Have you talked to your advisor about this? We talk about different things that we've learned during our professionalization within graduate school. And I helped him with his essays and research questions. Even though, we're in different fields, we've talked about things such as identifying jobs, negotiating salaries, and he sends me inspirational quotes occasionally.

The sibling relationships reported in this section varied significantly in both frequency and quality. Regardless of either of those factors, all of the participants who reported having siblings at least minimally benefited from moral support from their brothers and or sisters. Both siblings and parents offer an opportunity to receive support from individuals with whom close bonds are established. However, there is one other close

type of bond that has the potential to lead to familial ties. That is the bond with a significant other.

Significant others. Few participants reported on having significant others during their graduate education. For those who reported having significant others, the experiences were supportive at times and challenging at others. For the participant who reported a more positive experience, they referred to their significant other as a source of support when they stated, "Yes, well first my boyfriend has been one of the greatest supports. He's been a graduate student, not necessarily a PhD student, but I think that he has a good grasp of some of the challenges." For this participant not only was their significant other generally supportive, but she viewed the fact that he had also studied at the graduate level an asset in his understanding of her experiences. Additionally, the opportunity to date was considered part of her ensuring a balance between personal and academic life. Her significant other represented a close supportive person that was completely removed from her program. However, this relationship came at an acceptable cost as it was an additional relationship to manage along with friendships both inside and outside of her program, as well as other responsibilities.

> I've been able to learn the importance of knowing that I can do everything, and knowing how to say no. Understanding that I can't be the perfect friend, and just trying to maintain doing the things that are important to me -- you know like having a boyfriend, and enjoying that.

Whereas some relationships with significant others can provide support and an outlet from the consuming nature of graduate education, others can be more difficult. For another participant, their relationship with their significant other appeared to become not only generally unsupportive, but particularly competitive both with her individually as well as with school peers. She indicated that her significant other seemed to have an issue with her education attainment "he was uncomfortable with me becoming a doctor [getting a

doctorate]." The issues she encountered seemed to extend to the both her intermediate

accomplishments as well as those of her peers when she stated the following:

> The idea of me having a profile [achieving notoriety], being someone that people knew, and even knowing people who graduated from prestigious institutions. He was very uncomfortable and intimidated by. So that was a struggle for me.

Furthermore, since ending the relationship this participant continues to struggle with the

challenge of finding a suitable partner:

> And since I've broken up with him, I've had to deal with trying to find someone else to be in a relationship with, and finding people that are comfortable with the career that I've chosen.

Her views are not only shaped by her experiences, but also her observations. These

observations not only have implications for her choices as far as companionship, but also

her thoughts about family and career. This is exemplified in her following observation:

> I know women who have graduated with their Ph.D.'s, who are around 40, and they are worried about getting married and having kids, there a lot of black women like that in academia. They have to make decision about do I adopt, because I can't have kids anymore? They also deal with questions around if I choose to be successful in my career does that mean I'm giving up everything else that I want? So that's kind of hard to be thinking about.

The choice to pursue graduate, and more specifically doctoral level study, is not one that

should be taken lightly by anyone. However, as this participant indicates for women, and

more specifically African American women, the decision comes with additional

considerations that can be challenging.

For African American women family and significant others can be a source of

support, as well as challenges. Whereas, supportive relationships can include general

support, as well as for fewer the benefit of insight into the graduate education experience.

However, some individuals can be challenged by the lack of understanding of the graduate

education experience, despite general support in that a disconnection can exist in what can

be discussed and shared with individuals who are important to the student. Moreover, at

least as was reported for significant others, there is the added potential of competition and jealousy when partners are either not as accomplished academically or in their careers.

Financial Considerations

The need to be financial stable is important to any graduate student. It is one less matter to be concerned with, given the multitude of tasks and requirements that must be met. Lack of funding not only directly affects graduate school attendance, but also activities that can be important in a graduate student's development. One participant shared their views on the difficulties manage financial obligations and professional development:

> Initially my hope was that I was going to go straight to a doctoral program, and get a master's along the way and be fully funded. It--that didn't quite pan out. Getting the graduate assistantship which covers half of my tuition was very helpful with my Master's degree. However, the other half [tuition] required loans and working where I could squeeze it in. So that hurt me in regards to wanting to have done more things, like research or participating in different organizations, or professional organizations. You know I couldn't do that because I couldn't afford the dues, or I couldn't afford to participate because I was working. So financially that crippled me a little bit. So I think that as I thought about going into my doctoral program, I thought about how I wanted to be fully funded.

Even when full funding is available, it still may not be easy to plan for how one will meet their needs. For one participant, even though her needs were being met, she reported that whenever possible, she would send money back to her parents to help them manage their financial obligations. While honorable, the knowledge that at least some of your meager earnings as a graduate student are helpful, if not needed back home adds an additional burden on graduate students. Thus, when guaranteed funding is not available, students must hunt for their funding earnestly, and unfortunately that can take right up till the last minute:

> Okay --how our department distributes funds can be on a semester basis or a yearly basis. There have been times that I haven't known if I was going to get anything, for instance I just got a TA awarded to me two days ago and the semester begins in a week and a half. I haven't seen the same stability of funding in my department as

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I've seen in other departments. I can never say it made me think that I was going to drop out, because I have no problem taking out graduate loans. So anytime I wasn't sure I was going to have money, I was like fine I will take out the loans.

Sacrifices are made when funding does not meet needs, and how those needs are met can be difficult to plan for when guaranteed funding is not available. In some cases, a student may have alternative resources while others will not. For one participant, the support came from their family despite a desire to be seen as independent:

I think that my sister --she's been probably the most supportive of the siblings. She will say things like, I know you're in school so let me know if you need money. So it's almost like I'm in college still when she offers, and I'm like telling her no I don't need it because I'm working but thanks. The financial component is there with my sister.

In other cases, the support, when needed, is a welcomed benefit of having the support and the means. For this participant, the benefit of family support caused them to recognize that they were in a privileged position compared to other people they knew:

They do really strongly value education. So investing in education is something that they do support. They knew I had a strong interest in practice and research to a lesser extent, I did think about [type of program omitted] programs, and other programs that wouldn't fund me. You know programs that would've been $50,000 a year plus the cost of living with no funding. So you know coming here it has been tough. They pay you just enough to barely cover your rent. Luckily my parents have been able to supplement some of the stuff in the beginning. And lately I've been successful in getting some external funding. Yeah so, so this fellowship that I got was something that a faculty member sent out, and I had to really, you know, decide that I wanted it and then apply for it. You know, following up with everybody in making sure that my advisor met all the deadlines for recommendations things like that you know. So juggling that with all the work, and then finding time to apply for other grants. My program does a good job of ensuring that you get minimal funding, I think 12,000 in the base, in the early years, and if you start pushing you know 7 to 10 years then they may put a little pressure on you. Really that's not something that students worry about too much. And that's, you know, really important, because I have some peers from other universities, and [there] is this push to get done in three years. And I think that that would just add a whole other layer of stress that would not have be helpful to me. I mean-- it is a challenge, and other people you know have a lot of things in their lives, like children and things like that. And I don't know how they make it work in the graduate process. So I have some financial advantages that other people don't have.

As seen in these examples, resources can vary across individuals and institutions.

Regardless, the choice to attend graduate school; the stress of meeting one's financial needs

during graduate school; an assessment of whether one will make enough money after they have completed their degree-- all play a role in the decision-making. For the study participants, while a consideration, for the most part the cost of education versus the potential earnings was not a significant concern. This participant shares an experience that they had with their mother:

> It [finances play a role in career choice] did not actually. Funny because my mom asked me that the other day, "so what kind of money are you going to be making?" And I was like you know, I don't know. I think that part of it is wanting to go into [my field], and knowing the population I wanted to work with, and wanting to do nonprofit work, as my initial entry into the field, I don't count on making much money. And the possibility of, you know, doing something in academia, is not for me. It is just what it is. This is what I want to do regardless of the money.

While, for that participant, the decision was rather straightforward, others, while coming to the same conclusion, still struggled with the choice:

> I can I tell you, I didn't know that I was going to be this broke trying to pursue my education and help people. You know I realized I wasn't [going to] make a lot of money, but I didn't realize I was going to be this broke. But with all reality, this is what I chose to do because it was on my heart. I didn't realize the sacrifice. You know so I see myself continuing, and helping people, but if there's a way that I can find a way to make a little bit more money and do it, then I will.
> So, even among those who have graduated and were experiencing the pressure of

low wages, the choice would still be the same. This does not mean that changes may not occur in the future as needs change. As the last participant's statement indicated, if other means of earning income arise, they will adjust. However, these statements offer insight into those who choose passion over reward.

Research Careers

In addition to questions about the seven proximal influences identified for this study, several questions were used to probe the study participant's views on research as a career. Three themes are used to summarize the responses including early interest in research, Influential experiences during graduate school, and the likelihood of choosing a research career.

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Early interest in research. Two study participants indicated that they had an early interest in the field of research. For the two, the desire to do research existed prior to college and/or was fostered while in college prior to participating in the SPGRE/MURAP programs. For one participant, they commented about how they were encouraged to consider graduate school and to become a researcher, and subsequently what their view was on research as a career coming into their program:

> I had professors telling me that you need to do a Ph.D.; you're a Ph.D. person, don't go to law school and sell yourself short... So, when I got to my program, I think that even when I was working with my first advisor I always knew I wanted to do research, I just realized that we also have to teach. I was like thinking, we have to teach, why?

A similar sentiment was offered by the second participant as well, when they were speaking with a professor shortly after arriving in their graduate program:

> Teaching wasn't really what I was interested in. I've always been more interested in the research. So for me, it was great to hear her perspective... I think for me I was a focused on how do I do the research that I love.

Influential experiences during graduate school. Three of the participants commented on their experiences during their graduate education and the influence it had on their interest in research. Although two of the three maintained positive outlooks on conducting research, their experiences were not without challenges or disappointment. The first of the three enjoyed being part of multiple research projects while in graduate school, and developed strong relations with the principal investigators that left her encouraged and looking forward to conducting research in the future. However, despite all of the work, one truth about research resonated with her and raised questions about next steps:

> I think one of the things that is frustrating for me as a graduate student is that all of those collaborations do not necessarily translate into publications. Even though, we work towards those publications; they get rejected, or the project just kind of dies. And that reflects badly on me, because as a graduate student there is this expectation that you're supposed to have a certain number of publications before you get on the job market. And it looks like I haven't done anything for the past [number of] years, or by the time I graduate it will be [number of] years.

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For the second participant, the issue was not as advanced as whether they were getting publications; it was more so gaining buy-in from program faculty on their research interests related to new technology and theories:

> At least in my department, I think scholars may be a little scared to move in that direction because it requires them to learn new skills. There's also more established faculty who don't have to think about this stuff, but I really think that there's going to be a movement towards a generational gap between older scholars and those that are more familiar with information technology. So I really think that we have the Internet as this new kind of hot, not hot topic as it's not trendy, but there is an entire new social world that we have to learn to function in.

Whereas, both of these participants remained steadfast in their interest in continuing to do research, despite their setbacks, one participant took views that were developed while working with their advisor and formulated a view that remains with them years later:

> When I think of academia, and maybe this is my advisor's influence, all I think about is publishing, and how many articles you have published; and how you're a loser if you don't have 5 billion articles published, and that whole research world is not attractive to me.

This view of the academy is one that several of the participant's harbor, as will be seen under the research career theme at the end of the section. However, this participant is the only one who suggested a possible attribution to how their view was formulated.

Likelihood of entering a research career. When asked whether they thought they could see themselves in a research career, the responses were mixed with both positive and negative thoughts about the prospect. Five respondents indicated that a research career was possible, with only two appearing confident that they could hold a research position within the academy for at least a short period, and two indicating that they would consider it, but were rather unsure of whether they would actually choose to do so. Interestingly, the only response that was solidly affirmative about being in a research career was from the one participant who was seeking research opportunities outside of the academy. For the

others, concerns around the topic of lifestyle and the stress of the "publish or perish"

mantra were cited as primary reasons. This participant's perspective on tenure track

research positions offered insight into how the career of research professor is being viewed:

> In some ways it has turned me off, the amount of things they have to do, and then the lack of support they get to do it. I just talked to someone recently about faculty positions being the easiest job in the world, but that is a point that I completely disagreed with. It seems that they just have so many jobs. Applying for grants, and basically looking for your own salary; hiring your own colleagues as far as all of these faculty searches; presentations; finding your help through hiring grad students; doing the research; and teaching classes. It seems like the bar keeps getting raised again and again. Of course, my experience is working with a faculty member who did not get tenure. She was kind of surprised when it happened, and was talking about how it's getting harder and harder.

That perspective on the possibility of an academic research career can seem

daunting. However, when there was a belief that the lifestyle could be balanced with

research demands, the idea of being a researcher became more favorable to others. The

following participant's response best captures the sentiment of the majority of responses:

> You know, but I must say that I am a little bit intimidated by this idea of publish or perish. I'm not over that... I don't know if I want to be in that type of environment. But there are different types of research institutions. There are those top schools where people go hard for 10 years and they sacrificed things, but there are other institutions where you have to work hard still, but you can also have a life in the family. My preference is for more of a balance. I like the research and the research is important, but I don't want it to be all-consuming. So those have been my kind of hesitations, but if I could find something that was more of a balance I would definitely consider it long-term.

The comments above offer insight into how research careers in the academy are

viewed by those who are considering the opportunities. Again, only a few participants

discussed working in research outside of the academy, with two being focused on policy.

For many of the participants, it seemed as if academic careers were the only research

careers possible. Overall, study participants had at least some affinity for conducting

research, but experiences with the process, views about the value of their research, and

concerns associated lifestyle of academic research careers fostered mixed views about the long-term likelihood of being a part of the next generation of professional researchers.

Chapter Summary

In the chapter the results of both the survey and semi-structured interview analyses were discussed. The review of the survey resulted in 33 of the 41 respondents being individuals who attended graduate school and thus were available for all parts of the study. Descriptive data was presented on the respondents across various demographic variables, as well their responses to several open-ended questions about their views on graduate education and previous involvement in the summer research programs in which they participated. Lastly, the final sample was outlined for the next step of the study, the semi-structured interview.

As for the results of the semi-structured interviews seven overarching themes (i.e. campus environment, faculty, peers, professional network, external community, family, and finances) were reported on, along with participant's views on an eight topic, research careers. Environmental experiences, in particular university environment, can have a significant effect on student persistence. For the study participants some reported on three themes, a perception of a lack of focus graduate students by the university as a problem, interacting with students and programs, and the campus climate as it related to significant issues of interest (i.e. affirmative action). These various environmental interactions caused participants to feel both supported (e.g. participation in AGEP programs) at times, and in others to feel alienated (e.g. universities focus on undergraduate student activities and culture, classroom experiences). The importance of how the campus environment is experienced both at the university, as well as the departmental/program level, can have significant implications as to a student's sense of belong, as well as overall satisfaction with their program.

In addition, of all of the individuals with whom students interact within an academic environment, faculty represent the most influential when it comes to program satisfaction. Two themes were identified across participant responses as they related to advisors, first Personality and Character, and second, Advisee Development. For the participants in this study, the experiences varied from supportive to neglectful and spoke to how they viewed faculty as individuals as well as their commitment to developing the participants as future researchers. Participants reported that having access, receiving timely support and guidance contributed to their satisfaction. Whereas, the inability to access faculty, a lack of exhibited interest in their research and inadequate feedback were strong detractors. While most students persisted in their graduate study, some of them chose not to continue their education to the doctoral level. Part of the reason for persistence could be attributed to relationships with other program faculty, and faculty outside of their program whom participants connected with and were able to obtain support and or feedback outside of the student-advisor relationship.

In addition to interacting with various types of faculty, students also maintain multiple types of peer relationships. Participants provided comments on program and school peers within the university, as well as hometown and community peers from outside of the university setting. For the most part, interactions with peers from within the university were positive and supportive, especially among those who were outside of their programs. For peers from within their programs, criticisms were related to increasing feelings of competition as they advanced in their programs. This was due to limited funding and career opportunities. As for hometown peers and community peers, participants reported either no interaction or limited interaction. For hometown peers, the reasons for the limited interaction was often related to differences in educational attainment, in which the study participants had chosen to continue their education and

their hometown peers did not. This created a perceived gap in understanding of the study participant's everyday life. However, when relationships were maintained, participants indicated that the relationships were supportive despite any lack of understanding. As for external community peers, the limited interaction was more so a result of a lack of available time to commit to developing and maintaining those relationships. For those who did engage individuals from their community relationships were supportive, however for participants who were not able to establish those relationships that placed additional importance on the development of supportive peer relationships among program and school peers.

Separate of faculty and peers, students also have an opportunity to engage their potential professional networks in support of academic and career goals. While only a few participants had begun to do so, for those that did four themes were identified (i.e., individualized attention, supporting activities, future participation, social networking). Those that received individualized attention reported receiving encouragement to develop relationships beyond their adviser, and in some cases assistance in doing so. However, this was not something the majority of the participants experienced. In addition to or in lieu of individualized attention, some participants chose to be engaged in activities that fostered their opportunity to make professional connections whether it was attending professional mixers and or professional conferences. One activity reported as being helpful was presenting at conferences; however, some participants reported that they did not receive encouragement and, in some cases, received discouragement regarding attending conferences and presenting as the activity was viewed by some faculty as a waste of time. Although the level of participation at professional meetings was limited among participants, several indicated that they saw their level of participation increasing as their career advanced. In addition, to the various ways in which participants could engage with

individuals from their professional networks in-person, one participant found that online social networking apps such as Facebook and Twitter afforded her another medium for making connections virtually, as well as in-person.

In addition to their access to the previously reported contacts and networks, the community adjacent to a student's campus provides another resource for building beneficial relationships. The participants did not report engaging with their communities significantly; however, for those who did there were three themes for beneficial engagement (i.e. church, organizations, and environment). A few participants shared their varying levels of church engagement, all of which were positive. Whereas most involvement resulted in engagement with individuals who were not familiar with the graduate student experience or that of individuals within research careers, one participant benefited from members of her congregation not only being familiar but accomplished scholars. Regardless of familiarity, all relationships were reported as supportive. In addition to church, participants reported involvement with other organizations that afforded them either research and or volunteerism opportunities. Lastly, participants indicated that their community offered them an opportunity to disconnect from the academic environment through interacting with people of similar backgrounds where they lived and or where they sought out entertainment. Finding sources of support are critical for individuals who are pursing graduate degrees, and one source of support for most individuals is family.

The participants shared their views regarding receiving support from parents, siblings, and significant others. Although, for most of the study participants, this support was limited to what would be considered moral support, a number of them came from families in which at least one parent and, in some cases, grandparents had either attended or completed graduate education. Whereas the receipt of moral support was always appreciated, the added benefit of having individuals within the family who possessed some

understanding of the process, norms, and expectations of graduate programs was beneficial. These benefits were also reported for both siblings and significant others when applicable. However, not all experiences with family were viewed as ideal, as differences in educational attainment created gaps in understanding with both activities related to obtaining an advanced degree, as well as the choice to pursue one. Additionally, in the case of significant others, there was a report of feelings of competition and possibly feelings of inferiority related to academic and career attainment directed towards both the participant and their peers that arose for one study participants boyfriend. Overall, participants viewed their familial relationships as supportive; however moral support is not the only type of support that was discussed during the study, as participants also discussed the next topic of financial support as well.

Participants discussed their views regarding financing their education. Although the participants indicated concern for maintaining funding throughout their graduate education, few indicated that if school supported funding became less available that it would hinder their progress to degree completion. Several participants reported strong support from their families look at their education as an investment, and where possible families provided resources to assist the student. However, there was one report of a participant who carefully managed their school funding in order to send funds home to their parents whenever possible. Essentially, university funding provides a relief for all of the participants, and helps to mitigate the stress of sustaining oneself, and others while pursuing graduate education. However, for the majority of these individuals lack of funding would not necessarily be the determining factor in their not continuing towards degree completion and potential research careers.

When asked to share their thoughts on research careers three themes were identified, those being early interest in research, influential experiences during graduate

education, and the likelihood of entering a research career. Participants elaborated on their responses to the survey regarding the development of interests in research that spanned the pre-college period to the end of their undergraduate curriculum. Several participants attributed their interest to opportunities to gain research experience, including the SPGRE and MURAP programs. However, several participants reported on experiences that influenced their views on continuing towards a career in research during their graduate education. While positive experiences to conduct and present research supported the interest of some, others reported that observations of faculty workloads and lifestyle were deterrents. Moreover, not all experiences during graduate education were encouraging as interactions with faculty that were not viewed as supportive of the participants interests (e.g. research topics) also reduced interest.

In the next and final chapter, these results are further discussed, as well as limitations and implications to this research presented.

CHAPTER 5: DISCUSSION, CONCLUSIONS, LIMITATIONS, IMPLICATIONS, AND FUTURE RESARCH

In this chapter I will discuss the results presented in chapter 4, as well as my subsequent conclusions. Additionally, identified study limitations will be enumerated as well as the implications of the limitations and this study. Lastly, I will offer thoughts regarding potential future research related to the topics included in this study.

Discussion

The shifts that have occurred in the world economies have created a demand for workforces increasing comprised of individuals who are more highly educated than in the past (The Congressional Commission on the Advancement of Women and Minorities in Science, Engineering and Technology Development, 2000). The increase in science, technology, engineering, and mathematics (STEM) industries, as well as careers in knowledge industries, call for individuals who have minimally completed baccalaureate level and graduate level education. Unfortunately, the participation of individuals from historically ethnic and racial underrepresented backgrounds in graduate level education remains woefully low thus creating a growing dilemma (CEOSE, 2002; Women, Minorities, and Persons with Disabilities in Science and Engineering Report, 2012, 2013). With the continuing shift in the composition of the U.S. demographic to that of a more diverse citizenry, and low graduate degree attainment by individuals from African American, American Indian, and Hispanic backgrounds, the U.S. is faced with a troubling workforce reality (Johnston & Packer, 1987; Judy & D'Amico, 1997). The citizenry of the U.S. will not be qualified to meet the needs of current and future workforces unless more attention is

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given to the preparation and participation of underrepresented ethnic minorities in graduate level education across a broader spectrum of disciplines, and the cultivating of their interest in research careers.

The purpose of this study was to explore the potential proximal influences faced by individuals from underrepresented backgrounds during their graduate education, and how those influences might be connected with their career decision-making process. In carrying out the study, I drew on graduate student persistence literature and Social Cognitive Career Theory (Lent, Brown, & Hackett, 1996) to identify potential influences that are experienced during graduate education and operationalize how they might play a role in decision-making. The SCCT model offered by Lent, Brown, and Hackett (1996) conceptualized proximal influences as having a direct relationship to key mechanisms (i.e. interest, goal choice, and goal actions) of the process. The first mechanism, interest, represented the initial and maintained desire to engage in learning about a particular topic, and/or work towards a desired goal. The second, goal choice, was the identification and knowledge of activities available for engagement that supported the desired outcome; and the third, goal action, was the engagement in those activities identified in the goal actions stage. Given that an individual's entry into a research field is increasingly dependent on the completion of graduate education, the factors that are theorized as affecting graduate student persistence were also considered to play a role in the career decision-making process. For that reason, the factors of environment, faculty, peers, professional network, community, family, and finances were operationalized to be proximal influences on the three aforementioned mechanisms in the SCCT model.

Using a short survey and semi-structured interviews, I asked study participants questions related to their participation in graduate education, as well as their decision to consider and pursue a career in research. For this study, a research career was defined

broadly as career positions with research being a primary component of the role. The career positions did not have to be within the academy, though the choice to enter the academy as professors was of special interest given the literature on the low representation of URMs in the professoriate.

In the remainder of this section, I present a discussion of the study findings organized in a similar manner to the previous chapter. Each of the seven proximal influences, environment, faculty, peers, professional networks, community, finances, and family, are then followed by the topic of research as a career choice. For each of the discussion topics, I will draw on key findings related to how supports and challenges were experienced or perceived, and how these findings relate to the SCCT construct and the career decision-making process.

Academic Environment

The academic environment is the context in which students learn and develop while pursuing their respective degrees. Although other aspects of the academic experience can vary as far as one's degree of interaction, the environment remains a constant part of all of the experience from the beginning of a student's program through the end of the program. How one engages with their campus environment is believed to have an effect on their overall satisfaction with their experience, and ultimately degree completion. For most of the participants of this study, the larger university context was not something that they paid much attention to. For those who did, the participants indicated that they felt disconnected from the larger university culture. The perception for those participants was that the university catered to the undergraduate population, and graduate students were at best an afterthought. Given that students from underrepresented backgrounds already may experience their time in graduate education with feelings of being an outsider because of their ethnic background and in many cases being one of only a few students like

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themselves, which was also reported, the added burden of perceiving the institutional climate as one that is neglectful of its graduate students only compounds the challenges to be overcome.

When students do not connect with the university community on their own, there are opportunities to do so through structured programs. Although limited in their availability, programs exist to help URM graduate students transition, adjust, and persist in their graduate programs. Two participants shared that they participated in National Science Foundation – Alliance for Graduate Education and the Professoriate (AGEP) programs. These students indicated that the programs were sources of support as well as opportunities to interact with students from across campus programs. Given the purpose of programs such as AGEP, the support that the participants received was intended not only to assist them in persisting in their graduate programs, but also preparing for entering the professoriate. However, formal programs again are not widely available, and for students who do not have access to those types of programs, identifying resources on a campus that they may not think caters to them may be difficult. Few of the study participants mentioned participating in campus activities such as lectures, and none, with the exception of those connected to the AGEP programs, mentioned participating in professional development opportunities, or accessing student affairs offices, if needed.

For many of the study participants, their graduate experience was limited to their program environment. This environment was comprised of the physical department space, classrooms, and/or lab locations. Given that much of activities related to a graduate student's academic experience can take place within the program, it can be easy for students to limit their interactions with the university to within their program. Additionally, in my experience, graduate programs can promote a culture of encouraging students to rely on the program for all necessary support. That becomes problematic when

the challenges faced by the students are also experienced within that space. For two participants, the challenge was low representation of students from diverse, in particular African American, backgrounds in their programs. When students desire to make connections with individuals they consider to be like themselves or from backgrounds that they feel can share similar lived experiences, it can be isolating if that is not possible. Students who feel isolated are at higher risk of not persisting in their academic programs (Tinto, 1993).

As I stated earlier in this chapter, an individual without a graduate degree may find it difficult to gain entry into a research career position. Thus, positive student engagement within their respective university context is desirable, as it can lead to matriculation (Tinto, 1993). These experiences within the university context, whether supportive or challenging, can have implications for how career decisions are made. Students who are engaged in their environments may see their interests fostered through both activities they engage in and the resources they use. For instance, the attendance of lectures may increase an individual's understanding of their field; and the engagement in formal programs that promote student persistence and preparedness for research careers like the NSF-AGEP program all represent goal choices and actions that can lead to more informed career decisions. Conversely, when students face circumstances in which they feel isolated they may choose to not to engage opportunities within their environment and thus not employ goal actions that encourage their persistence towards their academic and career goals.

Faculty

The relationships that students develop with faculty during graduate education represent an opportunity for both formal and informal learning and development. Although the formal learning opportunities within the classroom are important, it is the other aspects of the relationships that can be as important, if not more, for career development

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and choice especially in research fields. The activities of educating, training, and socializing students to the program and its associated professions are accomplished by faculty. In this section, I discuss three types of faculty relationships (i.e. advisor, other program, and outside) that program participants experienced.

Of the three relationships, the advisor relationship is arguably the most important. For the participants in this study, the experiences with their advisors varied. Although some participants enjoyed positive and supportive relationships, others found their advisors to be self-centered and negligent. If a faculty advisor represents the closest formal faculty relationship for a graduate student, support and trust are paramount. Participants who felt that their relationships were positive cited several key factors: having access to their advisors, feeling that they could have open conversations and receiving honest feedback that they felt was in their best interest, and the sharing of resources that would assist in the development of the participant. Advisors who make themselves available and take the time to get to know their students establish a foundation on which a supportive, developmental relationship can be built. Students can accept feedback on work and recommendations for their development more readily. Conversely, when faculty are frequently unavailable and or do not exhibit interest in the student, they can leave students feeling unsupported and isolated until their need for support is supplemented through other relationships, or the advisor is changed. Both of those situations were represented in the experiences of study participants, exemplifying the importance of other program faculty in the support and development of students.

This brings up an important point, when it comes to underrepresented minority graduate students and, in the case of this study, African American women. The need for good advisement is critical to the success of a graduate student; however, URMs have varying needs when it comes to their primary faculty adviser, as well as other faculty who

are accessible to them. Some have posited that it can be beneficial for aspiring scholars to be mentored by same race faculty (Brinson & Kottler, 1993). Sligh Dewalt (2004) and Berry (2004) have both spoken of difficulties in gaining access or being understood by white faculty; each noting their perceptions of differential treatment (e.g., lack of access, excluded from important information, lack of effort to understand different perspectives) towards them in comparison to white doctoral students. However, Sligh Dewalt added that when she had the opportunity to connect with same race faculty her experiences shifted to ones that were more positive. Conversely, Anderson-Thomkins, Gasman, Gerstl-Pippen, Hathaway, and Rasheed (2004) stated how same race mentorship is not necessary (p. 233). They reported that while a desire to work with same-race faculty existed for some, students found that they could persist without that connection to a same-race adviser. The views on the need for same race faculty advisement and mentorship remain mixed. For one of the participants in this study, she found herself moving between multiple underrepresented faculty due to challenges as her first experience was not positive, and she found a better fit with an adviser from a different underrepresented background. These participants' experiences add to that of Sligh Dewalt (2004) and Berry (2004), who again found their graduate experiences challenging when they were not able to connect with same-race faculty. For the study participants, it was not as simple as connecting with a faculty of color, but finding the right one for her. Despite the differences across these various experiences, the one thing that holds true is that each of them found themselves seeking out the support of other program faculty.

Other faculty members within a program offer an alternative resource for support and guidance. The study participants spoke of their program faculty positively, noting their willingness to provide support with managing academic and political situations related to their programs. In regards to the political matters, when participants found

themselves in challenging situations with their advisors, it was another program faculty that provided insight on managing the situation. In one case, the issues with the advisor required an advisor change, and once the change to another program faculty member took place that advisor-student relationship thrived. For the participants, program faculty provided critical support when key relationships were failing. It is necessary for students to have options for building faculty relationships when it comes to ensuring that their education and training meets their needs. However, as was the case for a few participants, program faculty also contributed to propagating aspects of program culture that could have undermined participant development. Two participants reported that they were discouraged from attending professional conferences unless they were presenting, and in one case the perception was that less time should be spent presenting and more time on researching and getting published. Although focusing attention to research and the possibility of having one's work published is an important undertaking, a student's integration into their professional field is slowed and potentially disadvantaged when a student is encouraged to not engage with members in their field when possible. Program faculty can be excellent resources of support and guidance, but also can create challenges when their advice may not attend to the various needs of a student's development. In the case of conference attendance, Gardner and Barnes (2007) found that graduate student involvement in professional societies and related events was perceived as an important part of the socialization process to one's professional field. That is why it is helpful to for students to have connections with other faculty and professionals from outside of their program in order to gain diverse perspectives to advice the may be receiving.

The majority of the participants did not report having faculty connections outside of their programs. For the two that did, those relationships were extremely supportive and created opportunities not available within their program. By developing relationships with

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faculty from other university departments or institutions, students draw on alternative perspectives to the decisions they make regarding academic work and career pathways. These connections outside of a student's program can create opportunities for collaboration, sharing resources, and gaining work experience. Whereas the relationships with program faculty, including that of the advisor, must be managed whether good or bad due to program politics, the relationships with faculty outside of one's program can be more easily managed to the benefit of the student.

The relationships with faculty are critical for graduate students, and it can sometimes take multiple relationships to provide the student with all of the guidance and development required to prepare them properly for research careers. It is through these relationships that students gain an understanding of program norms and begin to be socialized to their career field. If students are to become researchers, they must be helped to understand what activities and opportunities are valued so that they know what goal choices should be considered, and upon to potentially be acted. It is when goal choices translate into goal actions that it is considered likely that an individual will persist in their career development and make informed decisions about their options. Unfortunately, for many of the interview participants their source of guidance from faculty was solely through their advisor, with fewer receiving guidance from other program faculties and even fewer from faculty outside of their program.

Peers

In addition to faculty, the academic environment provides an opportunity for other relationships as well. Peers come in various forms including individuals from one's program (program peers), individuals who have attended the same institution(s; school peers), individuals from childhood or precollege (hometown peers), and individuals that one meets in the community in which they reside (community peers). Each of these types of

peer relationships can be a source of support, or create challenges for students to manage. The study participants were asked to comment on their relationships with individuals from each of these groups. When discussing their relations with program peers, the comments were mixed. For many the connection was positive and supportive. Participants discussed sharing resources and received advice on how to navigate their respective programs. Unfortunately, a few participants also experienced a common challenge in graduate programs, that being competition among classmates. For students seeking to transition into research careers, the reality of limited funding opportunities and available post program positions can increase the degree of comparison among peers, and a reduction in the sharing of resource information. Given that the relations with program peers has the potential to shift from positive and supportive to limited and distant, it is good that there are other peer relations in the academic environment that can be fostered.

School peer relations, unlike those with program peers, can be sought out and fostered at the discretion of the student. That is particularly important for individuals from underrepresented backgrounds as the presence of diversity may be limited within their programs. Thus, when students find themselves in programs with a low representation of people from diverse backgrounds, they can seek out peer connections across their institution. Unlike with program peer relations, which are in part structured by the degree program, school peer relations are chosen and maintained by those involved and can be based on the mutual benefits. For study participants, school peers represented an opportunity to connect with others of similar backgrounds. For many, the ability to support each other given the shared lived experience of being underrepresented in their respective graduate programs provided a common ground for connecting. Additionally, given that they were from different graduate programs, the issues of competing for faculty attention and resources were removed and allowed for more supportive relations.

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Another source of supportive peer relations is with hometown friends. Although those friendships have the benefit of longevity, there are challenges to maintaining them over time and distance. For many participants, when discussing hometown peers the issue of divergent life paths arose. Whereas the study participants moved on to undergraduate and graduate level education, they reported that in many cases their hometown peers went directly into lifestyles that lead to work and families, with few friends also going onto college. For the study participants, the differences in life paths lead to a disconnection from their friends for some, whereas others reported reconnecting with friends either on visits home, via the internet or when in similar locations. The opportunity to connect with hometown friends was reported as beneficial as they allowed participants to disconnect from the academy. For those who had friends that attended college and possibly post-graduate education, these relationships allowed for similar benefits, but also the sharing of insights and resource information as it related to education. Although these relations were viewed as beneficial for those who maintained them, the connections were infrequent as distance was an issue.

The final peer group is comprised of individuals who are in the local community near a student's academic institution. Community peers represent the opportunity to have connections to individuals on a more regular basis than hometown peers, but with the similar benefit of them not being directly or connected at all to the academy. For only a few participants of the study, this was a very important opportunity for balancing their academic experiences with their life outside of school. Their local peers were a source of encouragement in both good and challenging times. However, most of the study participants did not establish connections to their surrounding community.

When considering the variety of peer relationships it is the two academic relations that provide what seems to offer the greatest opportunity for influencing career decisions.

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It is with program peers that individuals begin to establish professional collegial relations, and with whom they learn about program and professional norms. Additionally, connections with school peers from across the institution allow for the sharing of pan-university information and resources that assist with an individual's professional development. As the information, resources, and opportunities are shared through both of these peer groups the student can identify potential goal choices, as well as individual whom to explore those opportunities. As it is the academic peers that study together, attend symposia and conferences, participate in writing groups, and potentially conduct research with each other; and it is the consistent engagement with those individuals and the associated activities, goal actions, that contribute to the career decision-making process.

Professional Networks

In addition to the various connections that a student can make within their academic setting, the opportunity to connect with faculty, peers, and professionals from outside of their institution represent a valuable resource for the student during graduate school and when planning their career. However, those connections are not always easily made unless one receives assistance in reaching out to potential connections and or while attending professional meetings and conferences. For the study participants, experiences connecting with professional networks fell into four themes (i.e., individualized attention, supporting activities, future participation, and social networking).

When accessing professional networks it is helpful to have the support of someone willing to facilitate connections. For students seeking access, their faculty members are an excellent resource for carrying out that activity. The study participants had mixed reports on the degree of assistance they received with connecting with individuals across their professional field. Many of the participants did not report anything as there had not been any connection to their professional networks, or any discussion of the need to do so with

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their program faculty. Conversely, those who did receive networking support commented that their faculty took the time to think strategically about connections to be made, and took advantage of unplanned opportunities to make the connections while at events.

Although assistance in connecting with professional networks, especially from faculty, may not be readily available, students can engage in activities that support making connections. Attending lectures, meetings, and conferences allow students to be in spaces that encourage making connections while also exposing them to professional development opportunities. Some of the participants indicated that they regularly attended meetings and conferences. Additionally, two referred to how conferences gave them an opportunity to not only meet new people, but reconnect with peers and faculty from other institutions, including individuals from their time in the SPGRE and MURAP programs. By attending various conferences, students can build their network by strengthening long-standing relationships with face-to-face interactions, and expand the network through new connections. Connections like those with faculty, professionals and peers beyond the scope of individual programs can bolster the academic and professional support system for students, and provide them with diverse perspectives that can be beneficial when making academic and career decisions.

Although many of the study participants indicated having little to no professional network, nor being engaged in activities that would support the establishment of a network, they did see it to be important make connections in the future and to participate in professional events that would sponsor these connections. Most participants did not have a timeframe in which they saw themselves making more of an effort to connect, but simply indicated that they would need to start soon or shortly after completing their degree. The participants who were actively developing their network indicated that they planned on continuing their activities.

The role of professional networks is an important one in relation to career development. While some do not see networking, submitting papers to conferences for presentation opportunities, and minimally attending conferences as important activities during graduate education, these activities are important (Gardner & Barnes, 2007). By recognizing and taking part in activities, individuals are employing goal choices and actions that reinforce the idea that one is moving towards a particular career goal. However, knowing that these activities should be given priority is challenged when mixed messages about their benefits are shared by influential people such as program faculty. Therein lays the dilemma between the program faculties discussed in the previous section and the professional network of this one. If networks are not established outside of the program, then the only points of reference for students are their faculties and peers, and if those individuals do not provide advice that is supportive of the individual's long term goals, then it becomes more likely that opportunities associated with networking will be missed.

Community

For the study participants, the opportunity to connect with the community outside of their academic setting was seldom used. Whereas many indicated that the interest was there, for them the demands of their program did not allow for time outside of academics. A few however did choose to connect with their local communities. Of these few, the primary connection to the community was through religious affiliation. For these participants church was an opportunity to practice their belief while also benefiting from the support of the congregation. One participant used the connection to the church to meet with other African American women for support, whereas another connected through an interest in the choir. Through church involvement, participants found a space outside of the academy where they could engage in activities of interest and find additional support. Religious involvement has been shown to be a source of support and in stressful situations

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a coping mechanism for students (Constantine, Wilton, Gainor, & Lewis, 2002; Reed & Gicobbi, 2004)

The point about being outside of the academy is important as that was a recurring statement made by those who chose to engage their local communities. There was a need to disconnect from the academy and connect with individuals with whom they felt they identified with differently than what was available through their academic institution. One participant sought out a working class neighborhood to live in that was similar to her hometown. For her, the ability to live among and connect with people outside of the academic setting allowed her to "turn off" and not feel like they were "performing" for an audience. The connection in the community felt more authentic to them than when they were in their academic setting.

Connection to community can be an escape from the academic setting. In the community space sources of comfort, familiarity, and purpose can be sought out and engaged as needed. The connection to the local community represented a complete disconnection from the academy. However, for one participant, the connection allowed her to use research skills acquired in the academy within the community. Moreover, she found that through her involvement outside of school, she connected to others who were moving between the two spaces and could provide moral, as well as academic and career support.

Whereas for the participants the community was a way to disconnect from the academy, its purpose may have supported their career goals in various ways. First, if the connection provided some degree of balance for their lives outside of school, then it is plausible that it assisted with their academic persistence. Second, one participant was able to provide expertise to community projects that reinforced her understanding of her academic training. That participant, by volunteering for community-based research, chose to act on a goal choice that supported the possibility of their choice of a research career.

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Connections to community seem to have limited implications for influencing the career-decision-making process as it relates to SCCT. Students who choose to connect with their local communities may be able to continue to foster their interests if their research has applications to needs in that community, or if they by chance meet individuals in the community who are either incumbents in the same or a similar field. As for goal choices, like one participant who was interested in community-based research commented, communities can provide opportunities to identify needs or opportunities that support their career interests. Lastly, if activities or opportunities are identified, then goal actions can be engaged, thus contributing to the process.

Family

Family is considered by many to be a pillar of support. When students go off to college and graduate school, their connection back to the family is often a source of consistent support. However, this does not mean that family cannot contribute some challenges as well. For this study, family was defined as parents, siblings, and significant others. While there is the concept of extended family, this group is not discussed with the exception of one participant who made reference to that group. The participants in this study shared their views on family, and for the majority of them, they were confident that they would receive moral support from all members. In addition to the moral support, when possible family also provided financial support. These are the basic forms of support that were consistent across study participants.

When speaking specifically about parents, program participants share their experiences with receiving early encouragement to attend college, and in some cases graduate education. Whereas, other participants received their feedback and encouragement regarding pursuing graduate education, after starting their undergraduate degrees. Regardless of when the specific encouragement came, many parents were said to

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be proponents of education and having exhibited a constant, and sometime embarrassing, sense of pride for their children(s) educational achievements that ultimately was appreciated by the participants. This encouragement, pride, and appreciation for education were reported consistently across families regardless of parental educational attainment, with only one exception. While in some families both parents had not attended college, and others at least one did, in a few cases educational attainment at not just the undergraduate level, but at the graduate level went back three generations. For those participants, the benefits of parents and grandparents who understood college through graduate school was an invaluable resource in both navigating aspects of and completing graduate education tasks. Additionally, given that these participants had a grandparent that held a doctorate, gaining insight into career opportunities, including research careers drew on decades of experience. Conversely for two participants, their parent's lack of familiarity with higher education led to either a lack of encouragement to pursue higher education, or a gap in understanding about what the participant was still doing in school, and why it was important. Despite these challenges, the two participants continued to persevere in their respective educational endeavors.

Another group of family members also offered a source of moral support, and this too spanned educational attainment levels. Most participants reported having siblings. All of the sibling relationships were also reported as supportive despite the education attainment level of the siblings. For some participants, younger siblings were often pride filled and somewhat emulative of their older siblings. Others reported that their siblings while supportive had not chosen not chosen higher education paths, and did not show much interest in understanding more about their sibling's graduate educational endeavors. The last group of siblings, as far as educational attainments are concerned, were those shared the college lived experience with the participants. These individuals varied as far as

relations. For some participants, despite also being college educated, their siblings did not extend much support, if any. While on the other end of the spectrum, the participant enjoyed the privilege of having a sibling who was also in a doctoral program and offered moral, resource-sharing, and accountability support to the participant.

The last group mentioned among family was that of significant others. While only two participants discussed having significant others in their lives during their graduate education, the information provided was across the spectrum of support, as well as introduced views towards a dilemma faced by women in the academe, and particularly African American women. While both relationships had their supportive periods, one participant shared how their boyfriend was a consistent source of support, and also indicated that the benefited from that persons understanding of the graduate education process. As was discussed earlier, when an individual can turn to familial supporters who understand the context of graduate education, and are possibly able to assist in both navigating the space, and meeting program expectations that support can mitigate the gap in understanding of the higher education context that most African American students experience with their families. Conversely, when significant others find it difficult to support their companion's academic advancement and the associated career advancement this can place a significant burden on the relationship. That was the case for the second participant, who reported issues of competitiveness and jealousy from their then boyfriend. Additionally, she shared that her observations of other African American women lead her to believe that the challenge of identifying suitable companions when one has achieved academically and career-wise is persistent. Moreover, as women cope with that challenge, they are faced with decisions that involve potentially starting a family without a companion (i.e. adoptions), and whether desired career paths are viable given personal desires and goals. It is a common among African Americans, especially among women, to discuss the

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academic achievement gap among African American men and women. As discussed in earlier chapters, among African Americans, the participation of women exceeds that of men in college level education at a ratio of approximately 3:1. This gap raises concerns regarding identifying available mates for those who seek same race companions. As with the participant in this study, it appears to be challenging for some men to date more academically and career accomplished women, and this can cause issues within relationships and potentially negatively affect academic and career persistence.

As for how family plays a role in career choice, there are several points that can be connected to the SCCT mechanisms of interest, goal choice, and goal actions. First, as reported, for most participants the family offered them the freedom to choose an educational path for which they had an interest, and passion. Moreover, the consistent moral and, in some cases, academic and financial support help students to persevere despite challenges and can contribute to them maintaining interest, as well as ensuring that degree completion becomes a reality. Second, participants who benefited from the cultural capital of having several generations of graduate students, and also researchers, in their families were able to understand effective options for goal choices. Understanding early the types of activities one should engage in and the probable expectations of a program of study assist in making choices that support long term career goals. Lastly, again encouragement to carry out goal actions is imperative, as this is the actualizing step of reinforcing career intentions.

Financial Considerations

The ability for a student to meet their financial obligations is understood to affect their persistence in graduate education. It is plausible that the same rationale that can influence decisions to attend and persist through one's graduate education may also influence one's career choices. For this study when participants discussed their financial

need and how it has been, or would be, meet their responses were grouped under four themes (i.e., program funding, external work, family support, and role in career decision).

The majority of the participants reported receiving at least some funding from their programs. For the students whose need was not fully met they discussed either using loans to bridge their need or finding work outside of their program. The funding situations faced by these participants sound normal for graduate students, however when students are first-generation college students, as several of these participants are, the idea of increasing debt can be daunting. Moreover, participants who choose to meet their financial obligations through extra work opportunities (i.e., research assistantships, directing a residential hall at a neighboring institution) reduced the time that they had to focus on academic specific tasks, but also engage in their academic community in ways that may have supported their academic persistence and preparation for career transition. The need to take up additional work varied as some participants sought to augment their income. Notably, one participant used some of her income to send money home to support her family.

Regardless of family economic background, nearly all of the participants indicated that they could or did receive financial support within the means of their families. However, two participants reported that they were specifically told by family that the expectation was that they needed to obtain scholarships or find other ways of paying for their graduate education. For those participants, no funding meant, no education. For the participants who did receive support from family, the degree of support varied from small amounts from parents and or siblings, to substantial support to cover high-cost expenses, such as rent when financial difficulties arose. All of those who received financial support appreciated the support, even if they felt that accepting it came with conditions or perceived stigmas from family members. Knowing that family financial support is available can be both comforting and burdensome. Accepting support when one needs it, is

not as simple as saying yes. When students are aware that the support comes at a cost to their parents or themselves, the weight of knowing can be distracting.

Education is often viewed as an investment in one's future. For several of the participants, this was made clear by family through the explicit and implicit expectation that they would go to college and even graduate school. For some parents education can be viewed as an opportunity to learn more about topic or career field that the student is passionate about regardless of earning potential, and in other cases there is at least a hope, and at most an expectation, that there will be a high return on the investment. The experiences of the study participants were across the spectrum of possibilities. Many indicated that they had the support of their family to choose their educational and career path without pressure to go into certain fields or have a certain level of earning potential. What appeared to be a common belief was that whatever is studied, because it was at the graduate level, career earnings should provide for a comfortable lifestyle. However, this was not the case for all of the participants as one participant reported being discouraged from entering a particular field because the experience of the family members was that career field did not provide enough financial reward. The fact that many of the participants did not have any pressure to choose a field may have been the result of the sampling. Due to lower responses from individuals who chose not to go to graduate school, or chose to pursue professional degrees, they were not included in the interview portion of the study. Two survey participants provided comments regarding their choice to go into other fields specifically because of the financial return on educational investment. If more of the survey respondents had chosen professional school that group could have been included in this study, and we may have heard of a more significant desire or push from family for choosing higher income yielding careers.

When considering how financial proximal influences may play a role in the career decision-making processes of interest, goal choices, and goal actions it is a matter of means. As discussed with the proximal influence of professional networks, opportunities to access potential network connections through meeting and conference attendance can cost money when not supported by one's home institution. One participant stated that there were conferences and other activities that they were not able to take advantage of due to a lack of finances, despite their interest. If students are not able to participate in activities that allow them to develop as both students and professionals, then it is possible that their engagement (i.e. goal choices, goal actions) with their academic and career goals may waiver. However, even the denial of those opportunities pale in comparison to the more significant alternative, which is a lack of funding preventing the attendance of a graduate program completely.

Research Careers

Ultimately, this study is about how proximal influences experienced during graduate education affect decisions to enter research careers. For that reason, in addition to the questions posed to study participants about the seven identified influences, they were also asked to comment on the idea of entering a research career in the future. The responses to the research questions yielded responses across three themes, early interest in research, influential experiences during graduate education, and the likelihood of entering a research career.

For two participants, their interest in research formed and was encouraged early. Both shared that they knew of their interests before entering graduate school or participating in the SPGRE / MURAP programs. For one, that interest was also bolstered by undergraduate faculty taking a particular interest in them and encouraging them to pursue doctoral level study. What was not clear from the interviews was what might have

been the impetus for either of the participant's initial interest. Regardless, in the case of both of these individuals they remain interested in conducting research and plan on it being a part of their career.

As far as the influential experiences during graduate school, most participants indicated that they conducted research, but only three offered insight into what types of experiences were influencing their thoughts on continuing. One participant, who remains steadfast in their interest to continue doing research, enjoyed multiple research experiences throughout their graduate career. However, she felt challenged by the difficulty of translating the work into publications which she knew she would need when entering the job market. Well aware of the process, it was not so much an issue of unawareness, as it was the frustration with the expectations on graduate students interested in career within the academy, and the questionable valuing, or more so devaluing, of the type (i.e., qualitative, community-based) of research they engaged in by the respective journals.

A second participant also felt challenged by what she viewed as a devaluing of their research interests. However, in that case the challenge was not with was not with the views of outside scholars, and the editors who act as gatekeepers of information through their journals. Instead, her issue was with their program faculty who were resistant to the participant's interest in the emerging area of research. Despite, the obstacle of bringing about a departmental cultural shift, this participant also remains excited about the prospect of conducting research as part of her career. The last of the three participants who offered insight as to her influential graduate experiences did not fare as well as far as maintaining an interest in conducting research. For this individual, relations with their advisor, and the observation of how that advisor managed a work-life balance, left a lasting impression on her which closed her mind to a research career. The idea of the stress and

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constant pressure to publish was all she equated with the academy and subsequently a research career.

These three experiences offer insight into what can go right and wrong during graduate education as far as fostering research interest. Participants indicated a desire to conduct research, engage with an open-minded faculty, and ultimately continue forward. However, when challenges arose and the ability to succeed and/or be happy was questioned, the outcomes became mixed. It is important to keep in mind that graduate students are always watching and assessing not only their path, but the paths of those they may wish to emulate. It is important that they are encouraged to discuss perceived challenges with incumbents and that the incumbents discuss not only the difficulties of being career researchers, but also the benefits.

The last theme under the research career category is the likelihood of entering a research career. As reported in the last chapter, half of the individuals interviewed indicated that a research career was possible, though one offered a detailed explanation of why it would be challenging for them to take the next step. The perceptions of an academic research career were daunting, and did not lend itself to a work life balance, a theme that was consistent among all of the participants. The other participants spoke of opportunities to conduct research, again within the academy, if they could identify institutions that also put an emphasis on teaching. Being in a career that was primarily focused on research was less appealing to nearly all of them, again withstanding the one participant who desired a fulltime research position outside of the academy. Whereas the desire for a student should be that they complete their education and find a career role that they consider suitable to their professional interests, the choice to choose careers that may not focus as much on research after receiving extensive training as a researcher is concerning. First, it is concerning from a student development standpoint. Although, it is understandable that

some individuals will change their minds regarding career goals as they acquire more information and experience to consider in making the decision, if decisions are the result of a lack of information or understanding of the opportunity, or academic and social experiences stemming from personal differences (e.g., gender, race, sex) during the educational experience, then there is more work to be done in attending to the development of future research professionals. Second, in this study, the majority of the 11 participants indicated that they were less interested in entering a research-focused career. While the results of this study are not generalizable, a closer look at what is influencing the decisions of student's like these is necessary given the demographic shifts in the U.S. population and the needs of the changing economies. If patterns of low participation of trained individuals from underrepresented backgrounds were to match the results of this study, then little progress would be made in meeting the need current and more so future needs of a workforce increasingly dependent on the involvement of people from diverse ethnic backgrounds.

Conclusion

This study had two guiding questions. First, how do experiences related to graduate education and the components of Social Cognitive Career Theory help us to understand former undergraduate research intern choices of persistence towards Graduate Education completion? Second, how do experiences related to graduate education and the components of Social Cognitive Career Theory help us to understand the research career choices former undergraduate research interns?

When reviewing these questions, in hindsight, and taking into consideration the study design, these two questions seem to collapse into one question as it relates to career choice. I say this because the same proximal influences and SCCT mechanism that support the career choice of entering a research career, seem to support graduate matriculation for

the same reasons. It appears that even with a review of the sub-questions that can be seen in appendix H, these two broad questions are not nuanced enough to suggest any possibilities that differentiate between the two processes. Thus it may be that these are one process and two separate processes. An alternative possibility would be that the semi-structured interview protocol was not nuanced enough and did not yield the necessary data to answer the questions separately.

With that stated, I believe that this study was able to begin to identify how the proximal influences of environment, faculty, peers, professional networks, family, community, and finances manifest within the graduate school experience, and how the map onto the SCCT mechanisms of *interests, goal choices, and goal actions,* as seen in the discussion above.

Lastly, from these findings, come two particularly important points. First, while a shortage of underrepresented minority faculty members remains across the country, are we risking losing potential additions to this workforce by pushing students, especially those in doctoral programs, to see career appointments at exclusively research-extensive institutions? From the comments of these participants, while they are probably capable of obtaining such positions, is it possible that the options presented to them as acceptable employers tends to be too narrow. Conversely, because this study did not seek to gather information from the faculty with whom the students are engaged with, that their interpretation of where they are being encouraged to consider, is more of a perception than a reality. Further, for those students who are deciding or have determined to not seek a career in the academy, we must also ensure that they are first, still encouraged and developed as researchers, while also helping them to become aware of the alternative research careers available to them. The opportunity to encourage and better prepare

students to become researchers and meet the workforce demands of the thriving economies requires this career choice as well.

However, it requires outreach, encouragement, and attention to proper development of an underserved, underrepresented pool of US citizens. As participants in this study indicated, participation in programs like the Summer Pre-Graduate Experience (SPGRE) program, and the Moore Undergraduate Research Apprentice Program (MURAP) can have a significant effect on their interest, preparation for graduate education, and the establishment of support networks. Additionally, program such as the National Science Foundation (NSF)-Alliance for Graduate Education and the Professoriate (AGEP) and the National Institute for General Medical Sciences (NIGMS) - Initiative for Maximizing Student Diversity (IMSD) that create support systems for underrepresented students in graduate education provide invaluable assistance in meeting this goal. The efforts to increase participation of underrepresented minorities in graduate education and research careers must continue, and in my opinion they must expand.

<div align="center">Limitations</div>

Two limitations were identified with this study that included the study response rate and participant educational diversity. The first limitation is related to the response rate for the study. When this study was initiated, the intention was to draw the sample from four separate cohorts which offered heterogeneity across ethnicity and gender. Unfortunately, few members of the 2004 cohort were reachable with the contact information that was made available by the programs. This resulted in the 2004 cohort being dropped from the study. Additionally, after receiving responses to the study invitation and short survey, 11 participants who had delayed entrance into graduate education had been identified for the interview stage of the study. The objective of this study was to interview this group as well as a group that had entered graduate education

directly. Unfortunately, the response rate and technical difficulties with those who were interviewed meant that this group also had to be dropped from the study due to low representation. Thus the sample ended up being exclusively African American women studying in the arts and humanities (A&H) or social, behavioral, and economic sciences (SBE). While individuals from these academic backgrounds can possibly help meet the workforce needs within the knowledge based economies, the lack of inclusion of individuals from the science, technology, engineering, and mathematics (STEM) fields means that this study does not contribute to the need to better understand individuals considering research careers in those critical workforce fields.

The second limitation is that I did not consider the various options that participants had to engage in graduate education (i.e., full time, part-time, residential, and online). Although none of the study participants chose to engage in online graduate education, some of the participants were involved in part-time programs that limited their involvement with their program peers and faculty, as well as on campus. Whereas those individuals were able to comment on some interview questions, their responses to others were not as full and rich as desired. This limitation also links to the previous limitation, in that if random stratified sampling had not been used, but rather purposive sampling as is acceptable with qualitative methods, I may have been able to identify different study participants who could have provided more rich responses to all of the questions.

Implications

The findings from this study have several implications for addressing the needs of graduate students and supporting their career decision-making process in a manner that encourages consideration of research careers. I share these implications within the categories of programming, evaluation, policy, and theory.

Programming

Graduate education is not the same for everyone and although many students can count on moral support from those around them, the act of being a graduate student, becoming a scholar, and choosing to be a researcher requires more than such support. As discussed, there is a socialization process that occurs during graduate education. Whereas the calls for the training of faculty advisers and development of resources such as manuals to assist them in delivering student support (Barker, 2010) are steps in the right direction, they represent a long-term solution to this issue as it requires individual buy-in by each faculty member in order for equitable experiences to possibly occur. For those students who find themselves working with faculty that do not take the time to invest in their acclimation to graduate program culture and immersion in the field, both the process of succeeding in graduate school as well as becoming a member of their respective field is hindered. For that reason, institutions need to consider programmatic ways in which expectations are conveyed, guidance delivered and access to resources and networks become more available to all. Institutions are not without models for such efforts, as programs such as the National Science Foundation Alliance for Graduate Education and the Professoriate (AGEP), as well as the National Institutes for Health Initiative for Maximizing Student Diversity (IMSD) are examples of ways of delivering the needed support. These programs utilize both faculty and staff to provide guidance, support, and professional development activities to enhance student understanding of the cultural expectations of their respective fields both during academic study and entry into the field as a professional. However, these programs are primarily focused on students in the science, technology, engineering, and mathematics (STEM) fields, and unlike those in those fields students in the arts, humanities, and social sciences often are more reliant on the student-faculty relationship as they are not part of research groups in which peers and professional

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researchers (e.g. postdocs) who can supplement the guidance and training received from the primary faculty adviser.

Evaluation

Related to the implication on programming, if efforts are undertaken, it is necessary that evaluation of the program outcomes as they relate to programs goals to be conducted. Currently programs like AGEP and IMSD are required to have program evaluation components, but for efforts that may be developed more locally, it is important that what will be done, how it will be one, and how it will be evaluated are all taken into consideration simultaneously. In this time of accountability, we must ensure that efforts that work are identified, and we understand why they work, and how they may be replicated, otherwise we risk loss of funding and the creation of a need gap.

Policy

Appropriations for the sustainment and potential replication of existing programs are increasingly limited. However, the inability of the U.S. to meet its workforce needs is a threat to economic security. It is imperative that the action be taken to ensure that solutions to address these needs are afforded priority and sufficient funding. The advocacy needs to occur at the local level with upper-level university administration and boards of regents, as well as state and federal government levels.

Theory

This research contributes to the literature on the topics of both graduate student persistence, and Social Cognitive Career Theory (SCCT). The need for research that includes individuals from diverse populations in both of these areas is needed. This study provides additional insight on the experiences of African American women who are studying in the A&H and SBE fields of study, and what influences may exist during their graduate school experiences, and on their choice to consider entering research careers.

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Given the demographic shifts in the U.S. population it is critical that future research on the topics graduate school participation and research career choice include participants like those in this study as well as individuals from other underrepresented backgrounds. Without, that increased inclusion, our understanding of the needs of our available citizenry will decrease as it relates to preparing, supporting, and developing a competitive and inclusive workforce.

Future Research

This research contributes to a limited body of literature on both graduate student persistence and graduate student career decision-making as it relates to the Social Cognitive Career Theory. Because of the limited research, the opportunity for future research is rich with opportunity. As it relates to the current study, there were several limitations and implications that suggest opportunities for further investigation.

First, this work focused on a small population of former participants from which the sample was drawn, as previously indicated this created challenges throughout the study. Thus, expanding the study to focus on MURAP students who participated in subsequent years would allow for the study to continue focusing on students who experienced a similar structure to their summer research experience prior to entering their graduate program. Also, due to the challenges with sampling, there remains an opportunity to conduct studies that include individuals who chose professional graduate programs, or to not continue their academic training to the graduate level in order to better understand their choices to not pursue research intensive academic programs and careers. Additionally there would be an opportunity to refine the survey and interview instruments to acquire better and more diverse data. The scope of this study affected the ability to delve more deeply into each topic, and if the survey instruments are refined, and the study segmented it could allow for increased richness of data.

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Second, further investigation is needed into how programs that exist within the graduate context such as AGEP and IMSD assist students in meeting specific milestone in their graduate career. Given that these programs are obligated to conduct program evaluation, and not research, different questions that do not only focus on the value and worth of the program, but actually on potential program effects on individual participants can be posited and investigated, essentially to move beyond the questions of what works, and ensuring that we also investigate more deeply why the programs work at the level of the individual participant.

Third, although this study focused on a diverse population, as is needed in the advancement of SCCT research, this study did not take the entire SCCT model into account. A more comprehensive study, drawing on a larger and possibly broader (i.e. students for other undergraduate research programs, general graduate students) would help to inform better out understanding of the career-decision process during graduate education. Additionally, while there has been a call for investigating what are proximal influences in the career decision-making process, the comprehensive model takes into account key social-cognitive elements (self-efficacy, and outcome expectations) that greatly inform individual persistence and goal setting. To more fully understand how the proximal influences investigated in this study play a role in the individual's views of ability and perceived potential for performance, it is necessary to expand this work to incorporate designs that incorporate the other aspects of the SCCT model.

APPENDIX A: FACEBOOK RECRUITMENT PROTOCOL

IRB 12-1696 Facebook Recruitment Protocol

Mode:

Facebook (http://facebook.com) is a social network service on the internet.

Rationale:

Beginning in 2005, Facebook groups were created by the evaluation staff of the Summer Pre-Graduate Research Experience program. These groups were created for previous, current (2005) and future cohorts. The groups are intended to be a means to a) maintain contact with summer interns for program follow-up, and b) provide a forum, using emerging technology, for cohorts of interns to communicate post-program.   Given that Facebook users perpetually maintain their information on the service, it was anticipated that as long as they continued to use the service the program staff would have a means of obtaining current contact information for communication.

Students were not required to join these groups and they were informed that the groups were being created for purposes mentioned above.

Use:

The Facebook service SPGRE groups for 2004-2007 will be used to identify current contact information and cross reference it with information received from program upon IRB approval.   This should allow for increased likelihood of contact with potential study participants.

It is NOT the intention of the PI (Roy Charles) to use Facebook as a medium of communication of study details. Facebook will only be used to acquire current contact information from potential study participants. All study details will be communicated via direct email to participants.

APPENDIX B: SPGRE/MURAP ENTRANCE INTERVIEW
2007 SPGRE STUDENT INTERVIEW SCHEDULE:
1st Interview

Name: Preceptor:

Interviewer: Date:

BACKGROUND

1. Where are you from?
    a) Please describe your hometown. (Size of town, city, rural, etc.)

2. With whom did you reside prior to attending college? (Parent(s), grandparent(s), guardian, etc.)

3. What is/are their occupation(s)?

4. What is/are their level of education?

5. a) What is your current major?
    b) What attracted you to your major? Please be specific.

RESEARCH – EXPERIENCES & PERSPECTIVES

6. Have you had any experiences in programs similar to SPGRE?
    a) If yes, please briefly describe any similarities between the programs.
    b) If yes, please briefly describe any differences between the programs.
7. Have you ever been involved in research before (outside of a program context)?
    a) If yes, please describe briefly.
8. What does research mean to you?

9. What is your impression of research?

10. Can you envision yourself in a research career?
    a) Why or why not?

[If student answered yes but did not mention an academic research career, ask the follow up question]

    b) Can you envision yourself in a research career at a university or college? Why or why not?

11. How likely is it that you will choose a career as a college or university faculty member? Please explain.

    a) How would you feel about research as an obligation?
    b) How would you feel about teaching as an obligation?

FUTURE PLANS

12. What are your specific plans after graduation?

    a) If no specific plans, any general plans?

13. What are your overall thoughts about graduate school?
    a) What are your expectations about graduate school?

14. Tell me how you think you would perform as a graduate student?

15. What are or what would be your parents'/guardians' thoughts about you attending graduate school? Please be as specific as possible.

16. Do you intend to go to graduate school? (If no, ask why and go to #18)

    a) What would be your major and area of interest?
    b) How soon after you receive your bachelor's degree do you plan to attend graduate school? Why?

17. Are there particular graduate programs at UNC to which you intend to apply?

    a) If yes, what are they and what is it about them that attract you?

    If not, why?

THE PROGRAM

18. How did you find out about the SPGRE Program (specifically)? (a) Faculty member's name? (b) Former SPGRE contact name? (c) other?

19. What were the motivating factors in your decision to come to this particular program?

    a) Of those factors, which were the most critical?
    b) How do you now feel about your decision to participate in the program?

20. What does your preceptor have you doing?

    a) How well can you carry out those activities?
    b) How satisfied are you with your performance so far?

21. Concerning what you are now doing in the program, how closely related are the activities to your initial interests?

    a) If what you are doing is closely related to your interests, do you still have those interests?
    b) If what you are doing is not closely related to your initial interests, are you interested in the area in which you are now working?
        i) If yes, is this new interest greater than your initial area of interests?

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22. How often do you see your preceptor?

23. Describe your relationship with your preceptor. Please be as candid as possible.

24. Who else are you working with in addition to your preceptor and what are their positions? *(Please get both names and positions).*

    a) If you are working with others, how much time do you spend with them compared to time spent with your preceptor?

    b) How do you feel about that?

25. *[The following question does not have to be asked of MURAP students]* If applicable, how comfortable are you with the following individuals in your research setting…

    a) …the post doctoral fellows?
    b) …the graduate students?
    c) …the other undergraduates?
    d) …any others?

26. Are you comfortable with or within your particular research setting?

    a) If yes, what are some of the aspects about the setting that contribute to you feeling comfortable?
    b) If not, please share the areas of difficulty you have experienced.

27. A meaningful experience is one that can be defined as having a significant and positive impact on a person.
    a) Based on the above definition, describe the research/scholarly experiences that you've had thus far?

28. How useful is what you're learning?

29. What expectations did you have before you started this program?

30. Have your expectations been met?

    a) If so, how well have they been met?
    b) If not, please discuss the areas of the program that have not met your expectations.

31. What is your opinion of the activities associated with the program outside of your research project?

32. Are you enjoying what you are doing so far in this program? Please elaborate.

33. How would you describe the social environment in the program?

34. What are your thoughts about your fellow SPGRE participants?

35. What is your opinion of the overall program at this point?

36. Would you care to add anything?

Please indicate the following, requesting the interviewees' assistance when necessary:

Interviewee's gender: Interviewees' race/ethnicity:
Preceptor's gender: Preceptor's race/ethnicity:

Type of school attended: HBCU/PWI
Type of undergraduate institution: Research/ Teaching

APPENDIX C: SPGRE/MURAP EXIT INTERVIEW

2007 SPGRE STUDENT INTERVIEW SCHEDULE:
2ND INTERVIEW

Name: Preceptor:

Interviewer: Date:

THE PROGRAM

1. How do you now feel about your decision to participate in the program?

2. What does your preceptor have you doing?
   a. How well can you carry out those activities?
   b. How satisfied are you with your performance so far?

3. Concerning what you are now doing in the program, how closely related are the activities to your initial interests?

   a. If what you are doing is closely related to your interests, do you still have those interests?
   b. If what you are doing is not closely related to your initial interest, are you interested in the area in which you are now working?
      i. If yes, is this new interest greater than your initial area of interests?

4. How often do you see your preceptor?

5. Describe your relationship with your preceptor. Please be as candid as possible.

6. Who else are you working with in addition to your preceptor and what are their positions? *(Please get both names and positions).*

   a. If you are working with others, how much time do you spend with them compared to time spent with your preceptor?
   b. How do you feel about that?

7. If you had to identify the person or persons, other than your preceptor, who have influenced you this summer who would that be? Describe your relationship.

8. *[The following question does not have to be asked of MURAP students]* If applicable, how comfortable are you with the following individuals in your research setting…

   a. …the postdoctoral fellows?
   b. …the graduate students?
   c. …the other undergraduates?
   d. …any others?

9. How comfortable are you with or within your particular research setting?
   a. What are some of the aspects about the setting that contribute to you feeling comfortable?
   b. Are there any specific things that make you uncomfortable in your research setting?

10. In what ways have the research or scholarly experiences that you've had so far been meaningful to you? (Based on this definition: A meaningful experience is one that can be defined as having a significant and positive impact on a person.

11. How useful is what you're learning?

12. What expectations did you have before you started this program?

13. a) In what ways have your expectations been met?
    b) Please discuss any of your expectations that have not been met.

14. What is your opinion of the activities associated with the program outside of your research project?

15. What do you like about the program so far?

16. How would you describe the social environment in the program?

17. What are your thoughts about your fellow SPGRE participants?

18. What is your opinion of the overall program at this point?

RESEARCH – EXPERIENCES & PERSPECTIVES

19. What does research mean to you?

20. What are your feelings about research?

21. Can you envision yourself in a research career? Why or why not?
[If student answered yes but did not mention an academic research career, go to b]
    b) Can you envision yourself in a research career at a university or college?

22. Can you envision yourself in a career as a college or university faculty member?

23. How likely is it that you will choose a career as a college or university faculty member? Please explain.
    a. How would you feel about research as an obligation?
    b. How would you feel about teaching as an obligation?

FUTURE PLANS

24. What are your specific plans after graduation?
    -If no specific plans, any general plans?

25. What are your overall thoughts and expectations about graduate school?

26. Tell me how you think you would perform as a graduate student?

27. What are or what would be your parents'/guardians' thoughts about you attending graduate school? Please be as specific as possible.

28. Do you intend to go to graduate school? (If no, ask why and go #31)

    c) What would be your major and area of interest?

    d) How soon after you receive your bachelor's degree do you plan to attend graduate school? Why?

29. Are there particular graduate programs at UNC to which you intend to apply?

    If yes, what are they and what is it about them that attract you?

    If not, why?

WRAP-UP

30. Do you have any suggestions and/or the contact information of key people who might be useful in promoting the SPGRE program on your campus and/or in general?

31. Is there anything that you would care to add in general regarding SPGRE?

Time interview ended:
Length of interview:

Student's gender: Student's race/ethnicity:

Student's academic rank as of the fall following the program:

Type of school attended: HBCU/PWI
Type of undergraduate institution: Research/ Teaching

Preceptor's gender: Preceptor's race/ethnicity:

APPENDIX D: INVITATION LETTER

August 2012

2004-2007 Summer Pre Graduate Research Experience (SPGRE)
& Moore Undergraduate Research Apprentice Program (MURAP) Alumni

Dear <Enter Name>

As a former SPGRE/MURAP program alumnus/alumna, you represent a special group of college students who have taken advantage of summer undergraduate research opportunities. While programs often report that a majority of participants continue on to engage in graduate education, less is known about how former participants utilize these experiences in their graduate education, and how these experiences influence graduate degree choice and potential research career entry.

Your participation is being requested in a study that will investigate the post-baccalaureate academic and career decisions of former SPGRE/MURAP students who were involved with the programs during the summers of 2004-2007. The study will have several phases. Phase 1 is a short online survey of former program participants. Phase 2 is a review of the pre- and post- program interviews of former program alumni from the summer(s) in which they participated—it does not involve any time on your part, as the analysis of that archival evaluation information will be conducted by me. Phase 3 is a one-on-one interview with former program alumni that will be conducted by either telephone or through an online service (i.e. Go-To-Meeting or Skype). While Phase 1 and 2 will involve all study participants, but only a randomly selected sample of those participants will be interviewed in Phase 3. Your consent covers all three phases of the study.

This study is being conducted as partial fulfillment of the requirements for the Doctorate of Philosophy (Ph.D.) degree I am seeking in the School of Education at the University of North Carolina at Chapel Hill. It is important that you understand your rights as they relate to this study. Included in this communication is a consent document that outlines the study and your rights as a participant. Please review this consent document to decide if you are willing to participate, and please print a copy of the consent information for your records. If you have any questions regarding the study, contact information for myself as well as Dr. Judith Meece, Chair of Dissertation Committee is provided in the notice. You will be asked at the beginning of the online survey if you agree to be in the study.

Your participation in the study will help provide critical data to assist in developing an understanding of the post-program academic and career decision-making paths of former undergraduate research interns. Greater understanding can have a significant impact on research and support program development, educational policy, and the future funding of similar programs. As noted above, after reviewing the information, if you agree to participate in this study please click the following link to indicate your informed consent and begin the survey. I CONSENT <embed survey link>.

Please note that this invitation is specific to you and should not be shared with anyone else.

Thank you for your consideration, and I truly hope you will assist in the advancement of this important body of knowledge.
Sincerely,
<Insert digital signature>
Roy Anthony Charles
PhD Candidate in Educational Psychology, Measurement, and Evaluation (EPME)
& SPGRE/MURAP Graduate Assistant 2005-2008
University of North Carolina at Chapel Hill * School of Education

Research Study Consent Information
IRB Study # 12-1696
Title of Study : Understanding the Academic and General Research Career Choices of Former Undergraduate Summer Research Interns
Principal Investigator : Roy Charles
Principal Investigator Department : School of Education
Principal Investigator Phone number : (919) 966-2613
Principal Investigator Email Address : rac@email.unc.edu
Faculty Advisor : Judith Meece, PhD
Faculty Advisor Contact Information : meece@email.unc.edu

What are some general things you should know about research studies? You are being asked to take part in a research study. To join the study is voluntary. You may refuse to join, or you may withdraw your consent to be in the study, for any reason, without penalty. Details about this study are discussed below. It is important that you understand this information so that you can make an informed choice about being in this research study.

What is the purpose of this study?
The purpose of this study is to investigate the academic and professional experiences that occurred after undergraduate summer research program activities that have influenced summer research interns' choices regarding research career possibilities.

How many people will take part in this study?
If you decide to be in this study, you will be one of approximately 125 former summer interns participating in this research study.

What will happen if you take part in the study?
Everyone who chooses to participate will be asked to complete an **online survey** that will take approximately 30 minutes. This survey will ask you to provide updated demographic information as well as information about your educational and career activities that have taken place since you were a summer research intern.

Some of those who completed the online survey will be randomly selected to be invited to participate in an **online interview** about your work, graduate education, and career choices; this interview could take up to 60 minutes. You may decline to participate in the interview when invited.

Those who choose to complete the interview may also decide to participate in the "**member check process**" that will allow you to review your interview transcript and provide feedback and request any changes that are needed. Helping in this way could take up to another 60 minutes.

What are the possible benefits from being in this study?
Research is designed to benefit society by gaining new knowledge. Information you share may help to inform programmatic design and development of summer research programs, graduate education policies and support programming, and national initiatives targeting the increase of underrepresented participation in research careers. You may not benefit personally from being in this research study, although you may find it interesting to think about the topics that are raised.

What are the possible risks or discomforts involved from being in this study?
We anticipate very few risks in this study. As indicated below, maintaining your privacy will be the highest priority. Key steps are planned for the data collection, data storage, and reporting components of the study that will protect your privacy and the confidentiality of your information.

How will your privacy be protected?
All of the data you provide will be stored with just an ID code, without your name on any of it. There will be a list that links you to your ID code that will be kept entirely separate from your information, and kept secure until no longer needed. There will be no way for anybody else to ever link your data to your identity, and no one will know which former summer research interns chose to participate. Additionally, results of the study will be reported in an aggregated manner, and without specific characteristics, such as names of universities, departments, year (s) of participation, and so forth.

What if you want to stop before your part in the study is complete?
You can withdraw from this study at any time, without penalty, and skip any question in either the survey or the interview, if you are invited to do that, for any reason.

Will you receive anything for being in this study? Will it cost anything?
You will receive no monetary reward for participating in this study. There are no costs associated with being in the study.

What if you have questions about this study?
You have the right to ask, and have answered, any questions you may have about this research. Contact the principal investigator listed above with any questions, complaints, or concerns you may have.

What if you have questions about your rights as a research participant?
All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns, or if you would like to obtain information or offer input, please contact the Institutional Review Board at 919-966-3113 or by email to IRB_subjects@unc.edu .

You should keep a copy of this information in some form, for your own records. If you agree to the above conditions and wish to participate in this study, please click the following link "I consent" and you will be taken to the online survey."

[I CONSENT <hyperlink to the survey will be imbedded in final copy]

SPGRE MURAP Follow Up Survey

Dear SPGRE/MURAP Alumnus,

This survey will gather information regarding your post program activities. Your contribution will be invaluable in advancing our understanding of the post-program academic and career decisions of former undergraduate research interns.   This survey will gather general demographic information as well as information regarding your thoughts across a few topical subjects. Please note that the most valuable answers are those that accurately represent your personal thoughts and experiences that affected your decision-making. While tempting, you should avoid any inclination to provide responses that may seem desirable or beneficial to the study unless they are truly representative of your personal experience. Before continuing it is important that you review the informed consent material and indicate that you understand your rights and agree to participate in the study as has been outlined in the materials you received with the invitation. IF you have reviewed the material and agree to participate please enter your Name and email address in the following boxes below. Again I want to thank you for agreeing to participate in the study.

Sincerely,

Roy A. Charles, PhD Candidate in Educational Psychology, Measurement, and Evaluation (EPME)

& SPGRE/MURAP Graduate Assistant 2005-2008

University of North Carolina at Chapel Hill School of Education

	Please enter your FULL Name In each box as appropriate. Once done click the forward button to continue the survey. (1)
I have reviewed the Study Details and Informed Consent material and understand my rights as a study participant. (1)	
I am willing to participate in the current study. (2)	

Academic Decisions

Did you attend graduate level education?

❍ Yes (1)

❍ No (2)

When did you decide to attend graduate level study?

❍ Pre-College (1)

❍ First year of college (2)

❍ Second year of college (3)

❍ Third year of college (4)

❍ Fourth or higher year of College (5)

❍ After graduating with your undergraduate degree (6)

If yes, please indicate the type of your initial graduate program

❍ Graduate Program (e.g. M.S, MPH, LCSW, PhD) (1)

❍ Professional Degree Program (e.g. MBA, JD, MD, DDS) (2)

❍ Dual Degree Program (Graduate Program + Graduate Program or Professional Degree Program) (3)

❍ Dual Degree Program (Professional Degree Program + Professional Degree Program) (4)

When did you enroll in graduate education?

❍ Immediately after undergraduate education (1)

❍ 1-2 year delay (2)

❍ 3-4 year delay (3)

❍ 5+ year delay (4)

What was your initial graduate degree objective?

❍ Master's degree (1)

❍ Doctoral degree (2)

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If your first degree was a Master's degree, was obtaining this degree a requirement in order to pursue a doctorate in your field?

❍ Yes (1)
❍ No (2)

If your Master's degree was NOT a requirement for future doctoral study, please share your reasons for choosing to complete a Master's degree first.

Did you complete your Master's degree?

❍ Yes (1)
❍ No (2)

Do you plan to pursue another graduate and/or professional degree? (choose all that apply)

❑ Master's degree (1)
❑ Doctoral degree (2)
❑ Professional degree (3)

Please share any thoughts you have about your next degree choice? (Include the order in which you plan to earn your additional degrees if you chose multiple degree above)

Please indicate when you entered or plan to enter your second graduate degree program (choose all that apply)

❑ Currently in program (1)
❑ 1-2 years after first graduate or professional degree completion (2)
❑ 3-4 years after first graduate or professional degree completion (3)
❑ 5 or more years after first graduate or professional degree completion (4)

If Currently in program Is Selected, Then Skip To Please share your thoughts about earn...

Please share your thoughts regarding any choice you have made to delay entrance into a doctoral or other graduate program

Please share your thoughts about earning a doctoral degree.

Demographic Information

Please indicate the degrees you have earned, school attended, major field of study, and time of completion. (Leave any degrees that are NOT APPLICABLE blank)

	Degree Type (e.g. BS, BA, MS, MBA, JD, PhD, PharmD) (1)	School attended (2)	Major/Field of study (3)	Semester/Year of completion (4)
Bachelors Degree 1				
Bachelors Degree 2				
Masters Degree 1				
Masters Degree 2				
Professional Degree 1				
Professional Degree 2				
Doctoral Degree				

Please indicate your sex
- ○ Male
- ○ Female

Please indicate your race/ethnicity (check all that apply)
- ❑ Asian / Asian American
- ❑ Black / African American
- ❑ Hispanic / Latina/o
- ❑ Native American
- ❑ Pacific Islander (5)

Please indicate the approximate age of your parent(s) or Guardian(s)

	Father / Male Guardian	Mother / Female Guardian
	Choose One	Choose One
under 40 years of age	○	○
41-50 (2)	○	○
51-60 (3)	○	○
61-70 (4)	○	○
71+ (5)	○	○

Please indicate the highest level of education (left column) completed for each parent or guardian at the start of each point of your academic career [undergraduate; graduate program 1; graduate program 2] (if an answer does not apply please leave it blank)

	Father / Male Guardian Education Level						Mother / Female Guardian Education Level					
	Elem. School	High School	Undergraduate	Graduate (Masters)	Graduate (Prof)	Graduate (Doc)	Elem. School	High School	Undergraduate	Graduate (Masters)	Graduate (Prof)	Graduate (Doc)
(1) When you Started Undergraduate School	○	○	○	○	○	○	○	○	○	○	○	○
(2) When you started your initial graduate, professional, or dual degree program	○	○	○	○	○	○	○	○	○	○	○	○
(3) When you started your second graduate, professional, or dual degree	○	○	○	○	○	○	○	○	○	○	○	○

Do you have any additional comments you would like to share?
Do you have any comments regarding this survey?

Thank you for your participation in this survey. If you have any questions about this survey or future phases of this study, please refer to the contact information provided to you when you received your invitation to the study.
END OF SURVEY

Appendix G: SEMI-STRUCTURED INTERVIEW SCHEDULE
Semi-Structured Interview Schedule for the SPGRE / MURAP - SCCT Research Career
Choice Study
Prepared by Roy A. Charles
Ph.D. Candidate
University of North Carolina at Chapel Hill – School of Education

I.   Asked of All Participants
Learning Experiences
1) Tell me about your undergraduate experiences after the summer program?
   a) Where there any classes that influenced your interest in pursuing graduate education?
   b) Were there any additional research experiences that influenced your interest in a potential research career?

II.   Asked of Participants Who Attended Graduate School Programs And Professional Programs If Applicable
1) When did you make the decision that you would pursue your graduate school degree?
2) Tell me about your relationship with your: (Prompts to use with each individual: Do you discuss your Interests, Goal Choices, Goal Actions)
   a) Graduate adviser?
      i) Is this person the same as one of your previous undergraduate research preceptors?
   b) Graduate research adviser?
      i) Is this person the same as one of your previous undergraduate research preceptors?
   c) Program faculty?
      i) Are any of these individuals the same as one of your previous undergraduate research preceptors?
   d) Do you have a mentor among your faculty? (How does this help you in preparing for your career)
      i) Do you have more than one mentor among your faculty?
      ii) Do you have mentor(s) outside of your faculty?

3) Peer Support (Prompts to use with each individual: Do you discuss your Interests, Goal Choices, Goal Actions, Graduate School/Program concerns)
   Tell me about your interactions with:
   a) Academic peers (explain: Your program inc. cohort) (Supportive, Challenging?)
   b) Personal school peers (different programs in same discipline or outside of discipline)
   c) Personal hometown peers
   d) Personal Community peers'
      i) Social Media effect on relationships!
         (1) Support

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(2) Ability to vent? (Challenge)

Family Support (Prompts to use with each individual: Do you discuss your Interests, Goal Choices, Goal Actions, Graduate School/Program concerns)

4) Tell me about your parent's views regarding your continuing your education to the graduate level.
   a) Were there ever concerns regarding your potential choice to continue your education into graduate level study?
5) Tell me about your parent's views regarding the possibility of you becoming a researcher
6) Do you have siblings
   a) Tell me about your interactions with them around continuing education and research career choice.
7) How did any of these people assist you in understanding and navigating graduate education and/or research
8) Significant Others?

Professional Network Access

9) Tell me about your experiences with your professional field (Prompts to use with each individual: Do you discuss your Interests, Goal Choices, Goal Actions with individuals or within groups in your professional community)
   a) Individuals and Community
      i) Do you know of individuals like yourself within your professional community?
      ii) Do you know of organizations within your professional community?
         (1) Do you participate in those organizations
      iii) Do you see opportunity to become an integral part of your professional community?
      iv) Do you believe members of your professional community are interested in assisting you with achieving your personal and professional goals?
      v) Have your faculty helped to foster relationships?
   b) Research (Value)
      i) Do you see others doing research akin to your interests?
      ii) Do you feel that research like yours is valued within your professional community?
      iii) How would you like to see your research used?
         (1) Are you aware of opportunities for your research to be used in this manner?
10) Do you feel that you have adequate interaction with people in your field of study?
11) What assists in your interaction with your professional network
12) What hinders your interaction with your professional network

Environment

13) Campus
   a) Tell me about your university community.
   b) Do you participate in any groups on campus? If so, please tell me about your experiences

c) Do you attend Lectures, Symposiums, or other academic/scholarly activities on your campus? What kinds of support?
d) Do you feel that there are individuals on your campus that you can seek out for support? What kinds of support?
e) Do you feel that there are offices on campus that you can seek out for support?

14) Community
a) Do you interact much with organizations within your community?
b) Do you feel that there are individuals in your community that you can seek out for support? What kinds of support?
c) Do you feel that there are services or resources in your community that you can seek out for support? What kinds of support?

Financial Considerations

15) Tell me about what/when/how financial consideration play a role in your decision to:
a) Continue your education.
b) Choose your career field

16) Did your parent(s) offer any advice or direction in your education and or career choice that had financial considerations?

Research Career Choice

What are your thoughts about a research career?

III. Asked of Participants who Completed Graduate Education and Chose Research Career Only

(For this group, temporal cues will be used to help frame and anchor memories. Depending on the question, participants will be asked to tell the interviewer a little about a) their last year of undergraduate, (b) their feelings at the end of their 1st year of graduate school, (c) How they felt when preparing for comprehensive exams, (d) How they felt when they were preparing for Dissertation Proposal, (e) How they felt when they were preparing for their dissertation defense.)

1) When did you make the decision that you would pursue your graduate school degree?
2) When did you make the decision to become a researcher?

Faculty Relationships

3) Tell me about your relationship with your: (Prompts to use with each individual: Do you discuss your Interests, Goal Choices, Goal Actions)
a) Graduate adviser?
    i) Was this person the same as one of your previous undergraduate research preceptors?
b) Graduate research adviser?
    i) Was this person the same as one of your previous undergraduate research preceptors?
c) Program faculty?

      i)   Were any of these individuals the same as one of your previous undergraduate research preceptors?

   d) Did you have a mentor among your faculty?

      i)   Did you have more than one mentor among your faculty?

      ii) Did you have mentor(s) outside of your faculty?

Peer Support (Prompts to use with each individual: Did you discuss your Interests, Goal Choices, Goal Actions, Graduate School/Program concerns)

4) Tell me about your interactions with:

   a) Academic peers

   b) Personal school peers

   c) Personal hometown peers

   d) Personal Community peers

Family Support (Prompts to use with each individual: Did you discuss your Interests, Goal Choices, Goal Actions, Graduate School/Program concerns)

5) Tell me about your parent's views regarding your continuing your education to the graduate level.

6) Were there ever concerns regarding your potential choice to continue your education into graduate level study?

7) Tell me about your parent's views regarding you becoming a researcher

8) Have there been any concerns regarding your choice to continue your education into graduate level study?

9) Do you have siblings

   a) Tell me about your interactions with them around your continuing education and research career choice.

Professional Network Access

10) Tell me about your experiences within your professional field (Prompts to use with each individual: Do you discuss your Interests, Goal Choices, Goal Actions with individuals or within groups in your professional community)

   a) Individuals and Community

      i)   Did/Do you know of individuals like yourself within your professional community when you made the choice to become a researcher?

      ii) Did/Do you know of organizations within your professional community when you made the choice to become a researcher?
        (1) Did you participate in those organizations

      iii) Did/Do you see an opportunity to become an integral part of your professional community?

      iv) Did/Do you believe members of your professional community were interested in assisting you with achieving your personal and professional goals?

   b) Research (Value)

      i)   Did/Do you see others doing research akin to your interests?

      ii) Did/Do you feel that research like yours is valued within your professional community?

      iii) How did/would you like to see your research used?

         (1) Were/Are you aware of opportunities for your research to be used in this manner?

11) Did/Do you feel that you have adequate interaction with people in your field of study?

12) What assisted/s in your interaction with your professional network

13) What hindered/s your interaction with your professional network

Environment

14) Campus

    a) Tell me about your university community.

    b) Did you participate in any groups on campus? If so, please tell me about your experiences

    c) Did you attend Lectures, Symposiums, or other academic/scholarly activities on your campus? What kinds of support?

    d) Did you feel that there are individuals on your campus that you can seek out for support? What kinds of support?

    e) Did you feel that there are offices on campus that you can seek out for support?

15) Community

    a) Did you interact much with organizations within your community?

    b) Did you feel that there are individuals in your community that you can seek out for support? What kinds of support?

    c) Did you feel that there are services or resources in your community that you can seek out for support? What kinds of support?

Financial Considerations

16) Tell me about what/when/how financial considerations played a role in your decision to:

    a) Continue your education.

    b) Choose your career field

17) Did your parent(s) offer any advice or direction in your education and or career choice that had financial considerations?

IV.   Asked of Participants Who Completed Graduate Education and did not choose Research Career Only

(For this group, temporal cues will be used to help frame and anchor memories. Depending on the question, participants will be asked to tell the interviewer a little about a) their last year of undergraduate, (b) their feelings at the end of their 1st year of graduate school, (c) How they felt when preparing for comprehensive exams, (d) How they felt when they were preparing for Dissertation Proposal, (e) How they felt when they were preparing for their dissertation defense.)

1) When did you make the decision that you would pursue your graduate school degree?

2) When did you make the decision to NOT become a researcher?

3) Do you think you might become a researcher in the future?

Faculty Relationships

4) Tell me about your relationship with your: (Prompts to use with each individual: Do you discuss your Interests, Goal Choices, Goal Actions)
   a) Graduate adviser?
      i) Was this person the same as one of your previous undergraduate research preceptors?
   b) Graduate research adviser?
      i) Was this person the same as one of your previous undergraduate research preceptors?
   c) Program faculty?
      i) Were any of these individuals the same as one of your previous undergraduate research preceptors?
   d) Did you have a mentor among your faculty?
      i) Did you have more than one mentor among your faculty?
      ii) Did you have mentor(s) outside of your faculty?

Peer Support (Prompts to use with each individual: Did you discuss your Interests, Goal Choices, Goal Actions, Graduate School/Program concerns)

5) Tell me about your interactions with:
   a) Academic peers
   b) Personal school peers
   c) Personal hometown peers
   d) Personal Community peers

Family Support (Prompts to use with each individual: Did you discuss your Interests, Goal Choices, Goal Actions, Graduate School/Program concerns)

6) Tell me about your parent's views regarding your continuing your education to the graduate level.
7) Were there ever concerns regarding your potential choice to continue your education into graduate level study?
8) Tell me about your parent's views regarding you possibly having become a researcher
9) Have there been any concerns regarding your choice to continue your education into graduate level study?
10) Do you have siblings
    a) Tell me about your interactions with them around your continuing education and research career choice.

Professional Network Access

11) Tell me about your experiences within your professional field (Prompts to use with each individual: Do you discuss your Interests, Goal Choices, Goal Actions with individuals or within groups in your professional community)
    a) Individuals and Community
       i) Did/Do you know of individuals like yourself within your professional community when you made the choice to become a researcher?
       ii) Did/Do you know of organizations within your professional community when you made the choice to become a researcher?

        (1) Did you participate in those organizations

      iii) Did/Do you see an opportunity to become an integral part of your professional community?

      iv) Did/Do you believe members of your professional community were interested in assisting you with achieving your personal and professional goals?

   b) Research (Value)

      i) Did/Do you see others doing research akin to your interests?

      ii) Did/Do you feel that research like yours is valued within your professional community?

      iii) How did/would you like to see your research used?

         (1) Were/Are you aware of opportunities for your research to be used in this manner?

12) Did/Do you feel that you have adequate interaction with people in your field of study?

13) What assisted/s in your interaction with your professional network

14) What hindered/s your interaction with your professional network

Environment

15) Campus

   a) Tell me about your university community.

   b) Did you participate in any groups on campus? If so, please tell me about your experiences

   c) Did you attend Lectures, Symposiums, or other academic/scholarly activities on your campus? What kinds of support?

   d) Did you feel that there are individuals on your campus that you can seek out for support? What kinds of support?

   e) Did you feel that there are offices on campus that you can seek out for support?

16) Community

   a) Did you interact much with organizations within your community?

   b) Did you feel that there are individuals in your community that you can seek out for support? What kinds of support?

   c) Did you feel that there are services or resources in your community that you can seek out for support? What kinds of support?

Financial Considerations

17) Tell me about what/when/how financial considerations played a role in your decision to:

   a) Continue your education.

   b) Choose your career field

18) Did your parent(s) offer any advice or direction in your education and or career choice that had financial considerations?

Appendix H. RESEARCH QUESTIONS AND THEORETICAL FRAMEWORK

The primary focus of this study will be on the Proximal Supports and Barriers (contextual influences) and the core constructs of Interests, Goal Choice, and Goal Action. With that said, it is anticipated that some data will be associated with the other aspects of the original model proposed by Lent, Brown, and Hackett. Below are the overarching research questions (RQ1, RQ2) and the sub questions for each (RQ1SQ1 and 2; and RQ2SQ1,2,3).

Q #	Research Question	Persistence Theory	SCCT Construct*
RQ1	How do experiences related to graduate education and the components of Social Cognitive Career Theory help us to understand former undergraduate research intern choices of persistence towards Graduate Education completion	Persistence Theories will be updated once the literature review is expanded as proposed in MOU.	Proximal Supports and Barriers Interests Goal Choices Goal Actions
RQ1SQ1	What graduate program experiences have influenced the participant's decision to persist in graduate level education? a. What graduate program experiences have created challenges (barriers) to the participant's persistence in their graduate program? b. What graduate program experiences have supported participant decision to persist in the graduate education (probes: faculty, peers, values, etc.)	Currently, the theoretical underpinning for all questions relate to the integration component of Tinto's theory as described in the dissertation proposal.	
RQ1SQ2	What social factors have influenced the participant's decision to persist in graduate level education? (probes: parents, economy/financial, mentors, peers, family responsibilities, role-models, career outlook, etc.) a. What social factors inhibited the participant's decision to participate in graduate education? b. What social factors supported the participant's decision to participate in graduate education?		

The primary focus of this study will be on the Proximal Supports and Barriers (contextual influences) and the core constructs of Interests, Goal Choice, and Goal Action. With that

said, it is anticipated that some data will be associated with the other aspects of the original model proposed by Lent, Brown, and Hackett.

Q #	Research Question	Persistence Theory	SCCT Construct*
RQ2	How do experiences related to graduate education and the components of Social Cognitive Career Theory help us to understand the research career choices former undergraduate research interns?	Persistence Theories will be updated once the literature review is expanded as proposed in MOU.	*ALL with a primary focus on Proximal Supports and Barriers, Goal Actions*
RQ2SQ1	Which participants have chosen to engage in research vocational activities regardless of post-baccalaureate education?	Currently, the theoretical underpinning for all questions relate to the integration component of Tinto's theory as described in the dissertation proposal.	
RQ2SQ2	What graduate program experiences have influenced the participant's decision regarding having a research career? a. What graduate program experiences inhibited participant perspective on NOT entering a research career? (SCCT Proximal Influences: faculty, peers, values, etc.) b. What graduate program experiences have supported the participant's perspective on entering a research career? (SCCT Proximal Influences: faculty, peers, values, etc.)		
RQ2SQ3	What social factors influenced the participant's decision regarding pursuing and persisting in a research career? (SCCT Proximal Influences: parents, economy/financial, mentors, peers, family responsibilities, role-models, career outlook, etc.)		

*The primary focus of this study will be on the Proximal Supports and Barriers (contextual influences) and the core constructs of Interests, Goal Choice, and Goal Action. With that said, it is anticipated that some data will be associated with the other aspects of the original model proposed by Lent, Brown, and Hackett.

REFERENCES

Anderson-Thomkins, S., Gasman, M., Gerstl-Pepin, C., Hathaway, K. L., Rasheed, L., (2004). Casualties of war: Suggestions for helping African American graduate students succeed in the academy. In D. Cleveland (Ed.) *A long way to go: Conversations about Race by African American faculty and graduate students*. New York, N Y: Peter Lang Publishing.

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*(5), 469.

American Association for the Advancement of Science. (2001). In pursuit of a diverse science, technology, engineering, and mathematics workforce: Recommended research priorities to enhance participation by underrepresented minorities. Washington, DC: AAAS

Bandura, A. (1986). *Social foundations of thought and action* (pp. 5-107). Englewood Cliffs, NJ : Prentice Hall.

Bandura, A. (1989). Regulation of cognitive processes through perceived self-efficacy. *Developmental Psychology, 25*(5), 729.

Barker, M.J. (2007). Cross-cultural mentoring in institutional contexts. *Negro Educational Review, 58*(1-2), 85-103.

Barker, M. J. (2010). Cross-race advising relationships: The role of race in advising relationships between black doctoral student protégés and their white faculty advisers. Unpublished Dissertation. Louisiana State University. Baton Rouge, LA

Bean, J. P., & Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Educational Research, 55*(4), 485-540.

Hudson Institute. (2013). Beyond Workforce 2020: A Hudson Institute Program Overview. Washington, DC: Heet, J.A. .

Bonilla, J., Pickron, C., & Tatum, T. (1994). Peer mentoring among graduate students of color: Expanding the mentoring relationship. *New Directions for Teaching and Learning, 1994*(57), 101-113.

Bourdieu, P. (1973). Cultural reproduction and social reproduction. In R. Brown (Ed.), *Knowledge, Education, and Cultural Change: Papers in the Sociology f Education* (pp. 71-112). London: Tavistock.

Booker, K. C., & Frierson, H. T. (2002). "What I did last summer": Minority college students' perceptions of their participation in a summer research program.

Cabrera, A. F., Castaneda, M. B., Nora, A., & Hengstler, D. (1992). The convergence between two theories of college persistence. *The Journal of Higher Education*, 63(2), 143-164.

Cabrera, A. F., Nora, A., & Castaneda, M. B. (1992). The role of finances in the persistence process: A structural model. *Research in Higher Education*, 33(5), 571-593.

Caberera, A, Nora, A., Terenzini, P, Pascarella, E, Hagerdon, L.S. (1999). Campus racial climate and the adjustment of students to college: A comparison between White students and African-American students. *The Journal of Higher Education*, 70(2), 134-160.

Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology Development. (2000). Land of Plenty: Diversity as America's Competitive Edge in Science, Engineering and Technology: Report of the Congressional Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology Development. Congressional Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology Development.

Committee on Equal Opportunities in Science and Engineering. (2002). 2002 Biennial Report to Congress. Retrieved from: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=ceose2002rpt

Constantine, M. G., Wilton, L., Gainor, K. A., & Lewis, E. L. (2002). Religious participation, spirituality, and coping among African American college students. *Journal of College Student Development, 43*(5), 605-613.

Council of Graduate Schools [CGS]. (2003). Inclusiveness series. Washington, DC: Council of Graduate Schools.

Davidson, M. N. & Fosters-Johnson, L. (2013). Mentoring in the preparation of graduate researchers of color. *Review of Educational Research, 71*(4), 549-574

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology, 53*(1), 109-132.

Committee on Underrepresented Groups and the Expansion of the Science and Engineering Workforce (US), Committee on Science, Engineering, and Public Policy (US), & National Research Council (US). Policy and Global Affairs. (2010). Expanding underrepresented minority participation: America's science and technology talent at the crossroads. National Academies Press.

Farro, S. A. (2009). Achievements and challenges of undergraduates in science, technology, engineering and mathematics fields in the Ronald. E. McNair program (Unpublished doctoral dissertation). Colorado State University. Fort Collins, CO.

Felder, P. (2010) On doctoral student development: Exploring faculty mentoring in the shaping of African American doctoral student success. *The Qualitative Report. 15*(2), 455-474.

Frierson, H. T. (1981). Minority Participation in R & D: Developing an undergraduate feeder system. *Journal of Negro Education*, 50(4), 401-406.

Frierson, H. T. (1998). Comparing perceptions of mentoring experiences of African American undergraduate humanities/social science and science majors. In Frierson, H.T. (Ed.), Diversity in Higher Education: Examining protégé-mentor experiences (Vol. 2, pp. 195-213). Stamford, CT: JAI Press.

Frierson, H. T. (2006). Summer undergraduate research programs as a route for expanding opportunities for minority students and to address the PhD shortage. Unpublished Manuscript

Frierson, H.T., Hargrove, B., & Lewis, N. (1994). Black summer research students' perceptions related to research mentor's race and gender. *Journal of College Student Development, 35*, 475-80.

Gale, N. K., Heath, G., Cameron, E., Rashid, S., & Redwood, S. (2013). Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Medical Research Methodology, 13*(1), 117.

Gardner, S. K. (2007). "I heard it through the grapevine": Doctoral student socialization in chemistry and history. *Higher Education, 54*(5), 723-740.

Glesne, C. (1999). *Becoming qualitative researchers*. New York, NY: Addison Wesley.

Golde, C. M. (1998). Beginning graduate school: Explaining first-year doctoral attrition. *New Directions for Higher Education, n(*101), 55-64.

Greene, K. V. (2007). Alumni perceptions of the McNair scholars program at Kansas universities (unpublished dissertation). Kansas State University. Manhattan, KS.

Grimmett, M. A., Bliss, J. R., & Davis, D. M. (1998). Assessing federal TRIO McNair program participants' expectations and satisfaction with project services: A preliminary study. *Journal of Negro Education, 67*, 404-415.

Hackett, G., & Lent, R. W. (1992). Theoretical advances and current inquiry in career psychology. In S.D. Brown & R.W. Lent (Eds.), *Handbook of counseling psychology* (2nd ed.) (pp. 419-451). Oxford, England: John Wiley & Sons

Hallock, V. H. (2003). Perceptions of the professoriate: Anticipatory socialization of undergraduate students from underrepresented groups. Unpublished Dissertations. Syracuse University. Syracuse, NY

Hamilton, C. A. (1998). Factors that influenced the persistence of minority doctoral students at Northeast Research University (Unpublished doctoral dissertation). University of Albany – State University of New York. Albany, New York.

National Institutes of Health (n.d.) History of MARC and MBRS Programs. Retrieved from: http://publications.nigms.nih.gov/mpu/summer02/history.html

Jay, M., Eatmon, D., & Frierson, H. (2005). Cultural reflections stemming from the evaluation of an undergraduate research program, In S. Hood, R.K. Hopson & H.T. Frierson (Eds.) The role of culture and cultural context: A mandate for inclusion, the discovery of truth, and understanding in evaluative theory and practice (pages 201-216). Greenwich, CT: Information Age Publishing

Johnston, W. B., & Packer, A. E. (1987). Workforce 2000: Work and workers for the twenty-first century. Indianapolis, IN: Hudson Institute.

Judy, R. W., & D'Amico, C. (1997). Workforce 2020: Work and Workers in the 21st Century. Indianapolis, IN: Hudson Institute.

Kezar, A. (2001). Early interventions: Beyond getting kids into college. I(8), 54-62.

Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior, 45*(1), 79-122.

Lent, R. W., Brown, S. D., & Hackett,G., (2000). Contextual support and barriers to career choice: A social cognitive analysis. *Journal of Counseling Psychology, 47*(1),36-49.

Lewis, N. R. (2007). Developing and testing a model to predict underrepresented students' plans for graduate study: Analysis of the 1988-2006 cohorts of a summer research program. Ph.D. dissertation, The University of North Carolina at Chapel Hill. Retrieved March 18, 2008, from Dissertations & Theses: Full Text database.

Lewis, N., & Frierson, H.T. (2006, Feb.). Increasing access: Students' attitudes toward graduate school and research careers following participation in a summer program. Paper presented at the annual meeting of the Southeast Evaluation Association, Tallahassee, FL.

Lewis, J., & Ritchie, J. (2003). Generalizing from qualitative research. *Qualitative Research Practice: A Guide for Social Science Students and Researchers,* 263-286.

Malcom, L. E., & Dowd, A. C. (2012). The impact of undergraduate debt on the graduate school enrollment of STEM baccalaureates. *The Review of Higher Education, 35*(2), 265-305.

Marshall, C., & Rossman, G. B. (1999). *Designing qualitative research* (3rd ed.) Thousand Oaks, CA: Sage.

May, G. S., & Chubin, D. E. (2003). A retrospective on undergraduate engineering success for underrepresented minority students. *Journal of Engineering Education, 92*(1), 27-39.

Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology, 38*(1), 30.

Mwenda, M.N. (2010). Underrepresented minority students in stem doctoral programs: The role of financial support and relationships with faculty peers (unpublished dissertation). University of Iowa. Iowa City, Iowa.

Nerad, M., & Miller, D. S. (1996). Increasing student retention in graduate and professional programs. *New Directions for Institutional Research, 92*, 61-76

Nettles, M. T., & Millett, C. M.(2006). Three magic letters: Getting to the PhD. Baltimore, MD; Johns Hopkins University Press.

National Science Foundation. (2000). Women, minorities, and persons with disabilities in science and engineering. Arlington, VA: National Science Foundation.

National Science Foundation, Division of Science Resources Statistics. (2002). Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002, Special Report NSF 03-312.Arlington, VA 2003. Retrieved from http://www.nsf.gov/statistics/nsf03312/pdf/women02.pdf

National Science Foundation, National Center for Science and Engineering Statistics. (2013.) Women, Minorities, and Persons with Disabilities in Science and Engineering: 2013. Special Report NSF 13-304. Arlington, VA. Retrieved from http://www.nsf.gov/statistics/wmpd/.

Office of Postsecondary Education. (n.d). History of federal TRIO programs. Retrieved from: http://www2.ed.gov/about/offices/list/ope/trio/triohistory.html

Patterson-Stewart, K. E., Ritchie, M. H., & Sanders E. T. (1997). Interpersonal dynamics of African American persistence in doctoral programs at predominately white universities. *Journal of College Student Development, 38*(5), 489-498

Patton, M. Q. (1990). *Qualitative evaluation and research methods*. Thousand Oaks, CA: SAGE Publications, Inc.

Patton, M. Q. (2002). Designing qualitative studies. *Qualitative research and evaluation methods, 3*, 230-246.

Pender, M., Marcotte, D. E., Sto Domingo, M. R., & Maton, K. I. (2010). The STEM pipeline: The role of summer research experience in minority students' Ph. D. aspirations. *Education Policy Analysis Archives, 18*(30), 1. Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3155261/

Pontius, J. L., & Harper, S. R. (2006). Principles for good practice in graduate and professional student engagement. *New Directions for Student Services, 2006*(115), 47-58.

Reed, S. and Giacobbi, P. R. , Jr. (2004). The stress and coping responses of certified graduate athletic training students. *Journal of Athletic Training, 39* (2). 193-200.

Reid, E. L. (2009). Exploring the experiences of African American women in an undergraduate research program designed to address the underrepresentation of women and minorities in neuroscience: A qualitative analysis (unpublished dissertation). Georgia State University. Atlanta, GA.

Riggins, T., & Frierson, H. T. (1996). Gender effects on minority students' perceptions of satisfaction with a summer research program. Paper presented at the annual meeting of the American Educational Research Association, New York., 2010

Ritchie, J., & Spencer, L. (1994). Qualitative data analysis for applied policy research. In A. Bryman & R. G. Burgess (Eds.), *Analyzing qualitative data* (pp. 173-194).New York, New York. Routledge

Rovai, A. (2002). In search of higher persistence rates in distance education online programs. *Internet and Higher Education, 6(1)*, 1-16.

Sadri, G., & Robertson, I. T. (1993). Self-efficacy and work-related behavior: A review and meta-analysis. *Applied Psychology, 42*(2), 139-152.

Simpson, M. T. (2003). Exploring the academic and social transition experiences of ethnic minority graduate students (Doctoral dissertation). Virginia Polytechnic Institute and State University. Blacksburg, VA.

Solem, M., Lee, J., and Schlemper, B. (2009). Departmental climate and student experiences in graduate geography programs. *Research in Higher Education, 50*, 268-292

Sowell, R., Zhang, T., Redd, and King, M. (2008) PhD completion and attrition: Analysis of baseline data. Washington, DC. Council of Graduate Schools.

Stage, F. K., & Maple, S. A. (1996). Incompatible goals: Narratives of graduate women in the mathematics pipeline. *American Educational Research Journal, 33*(1), 23-51.

Stanley, C.A. (1994). Mentoring minority graduate students: A west indian narrative. New Directions for Teaching & Learning, *1994* (57), 121-125.

Steele, C. M. (1992). Race and the schooling of black Americans. *Atlantic Monthly*, 269, 68-78.

Stewart, D. M. (1988). Overcoming the barriers to successful participation by minorities. *Review of Higher Education, 11*(4), 329-36.

Strayhorn, T.L. (n.d). Diversifying STEM: Underrepresented Students' perceived learning gains from structured research programs. Retrieved from http://www.ineer.org/Events/ICEEiCEER2009/full_papers/full_paper_106.pdf

Strayhorn, T.L. & Burt,B.A.(n.d). What Black undergraduates majoring in STEM learn from structured research programs: Differences by Sex. Retrieved from http://www.academia.edu/3997081/What_Black_Undergraduates_Majoring_in_STEM_Learn_from_Structured_Research_Programs_Differences_by_Sex

Swail, W. S., Redd, K., and Perna, L. (2003). Retaining minority students in higher education: An ASHE-ERIC reader. San Francisco. CA: Jossey-Bass.

The Harvard Crimson. (2005). Summer's comments on women and science draw ire. Retrieved from http://www.thecrimson.com/article/2005/1/14/summers-comments-on-women-and-science/

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago, IL: The University of Chicago Press.

Tyler, M.D. (1995). Enhancing the minority presence in graduate education VI: Catalyst for Success: The Summer Research Opportunity Program. Washington, DC. Council of Graduate Schools.

Valadez, J. R. (1998). The social dynamics of mentoring in graduate education: A case-study of African-American students and their graduate advisors. In H.T. Frierson (Ed.) Diversity in Higher Education. Examining Protégé-Mentor experiences. Vol 2. Stamford, CT. Jai Press Inc.

Williams, M. A. (2004).I got mine, now you get yours: Derailing the underground railroad. . In D. Cleveland (Ed.). A long way to go: Conversations about race by African American faculty and graduate students. New Your, New York. Peter Lang Publishing.

Williamson, M. J. & Fenske, R. H. (1998). Diversity in higher education: Examining protégé-mentor experiences (Vol. 2). H. T. Frierson (Ed.). Stamford, CT: Jai Press Inc.

Woodrow Wilson National Fellowship Foundation. (2005). Diversity and the Ph.D.: A review of efforts to broaden race and ethnicity in US doctoral education. Princeton NJ. Retrieved from http://0-files.eric.ed.gov.opac.msmc.edu/fulltext/ED536874.pdf

Zulli, R. A., Frierson, H. T., Jr., & Clayton, J. D. (1998). Parents' perceptions of the value and nature of their children's and their own involvement in an Upward Bound program. *Journal of Negro Education*, *67*(4), 364-372.