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Complete Issue

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School Counseling and Postsecondary Success



NCSCPS
The National Consortium for School Counseling
and Postsecondary Success



About the Journal



An Overview

The *Journal of College Access* (JCA) focuses on the current trends, research, practices, and development of all types of programs, policies, and activities related to the access of and success in postsecondary education. Issues of college aspiration, qualification, application, enrollment, and persistence are the primary emphases.

The Journal was co-founded by Dr. Patrick O'Connor and Dr. Christopher Tremblay. O'Connor is Associate Dean for College Counseling at Kingswood Cranbrook School in Bloomfield Hills, Michigan and is a board member for the Michigan College Access Network (MCAN). Tremblay is a Research and Marketing Consultant for Gifted and Talented Education (GATE) at Michigan State University.

JCA is affiliated with the Michigan College Access Network, a statewide non-profit organization with a mission to increase college readiness, participation, and completion in Michigan, particularly among low-income students, first-generation college going students, and students of color.



Launched in March 2014, JCA is a part of Western Michigan University's ScholarWorks, a digital showcase of research, scholarly and creative output.

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Introduction by the Guest Editors



Authored by
Laura Owen, Ph.D.
Cheryl Holcomb-McCoy, Ph.D.

In a newly released report, *The State of School Counseling: Revisiting the Path Forward* (Brown, Hatch, Holcomb-McCoy, Martin, Mcleod, Owen & Savitz-Romer, 2017), the National Consortium for School Counseling and Postsecondary Success (NCSCPS) laid out the critical need for research that shows how school counselors uniquely impact postsecondary outcomes.

“While the research on school counseling and college readiness counseling is growing, it still lacks the robust scholarship necessary to guide effective practice. More empirical research is needed, most notably in the areas of technology use, early college awareness, family engagement, evaluation systems, and professional development” (Brown et al., p. 17).

The report culminates with a list of recommendations for school counseling credentialing and licensing, practice, research and policy needed to ensure that all students graduate high school college and career ready. This special edition journal, “School Counseling and Postsecondary Success,” focuses on robust research studies that can guide school counseling practice and improve student postsecondary success.

We feature six scholarly articles that offer new and innovative



perspectives related to school counseling in the context of college and career readiness. The first article provides an overview of 10-years of peer-reviewed research on school counseling interventions aimed to improve college readiness, college access and postsecondary success. Similar to the findings shared in the *Revisiting the Path Forward* (Brown et al., 2017) report, these authors discuss gaps in the literature and share much needed recommendations to strengthen future research related to school counseling and college and career readiness. The remaining articles look at the effect of purpose orientations on high school graduate’s college application decisions, the use of technology in college and career counseling and college and career outcomes related to specific student populations (English Language Learners (ELL), African Immigrant, and low income, first generation).



NCSCPS
The National Consortium for School Counseling
and Postsecondary Success



Introduction by the Guest Editors

FEATURED ARTICLES

School Counseling Intervention Research on College Readiness, College Access, and Postsecondary Success: A 10-year Content Analysis of Peer-Reviewed Research

In this 10-year content analysis of peer-reviewed research, the authors review and describe the available intervention research designed to improve post-secondary success. The authors identified 10 intervention studies that were implemented in high school settings. Five of the ten studies were large-scale, multi-modal collaborative interventions. The authors report that none of the articles were published in counseling journals, and various levels of rigor were represented across the studies. Implications for researchers and school counselors are discussed.

Effects of Purpose Orientations on Recent High School Graduates' College Application Decisions

The authors of this paper used the 2002 Educational Longitudinal Study to examine purpose orientations and how they impact student's college application decisions. The authors identified four types of purpose orientations: career, interpersonal, altruistic, and self-oriented purpose orientations. Career purpose orientation was found to be positively related to high school students' decisions to apply to college. Implications for school counselors and researchers are discussed.

Increasing College Access Through the Implementation of Naviance: An Exploratory Study

This study looked at how school counselors can use educational technology, specifically Naviance, to increase student exposure to college information and support postsecondary planning. The authors found that students who logged into Naviance more frequently had higher college application rates. Implications for school counselors are included.

English Language Learners' (ELLs) Science, Technology, Engineering, Math (STEM) Course-Taking, Achievement and Attainment in College

Using data from the Educational Longitudinal Study of 2002, this study looked at demographic variables, math course-taking and high school GPA to determine effect on English Language Learner (ELL) students' STEM course-taking, achievement and attainment in college. The authors found gender, GPA, and the number of advanced math courses were predictive of the number of STEM courses taken in college. Implications for practice and future research are discussed.

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Career Decision-Making and College and Career Access Among Recent African Immigrant Students

The number of African immigrant youth in American classrooms is on the rise. School counselors are uniquely positioned to help these students to be college and career ready. Using the Social Cognitive Career Theory framework, this article addresses the unique career development needs, as well as the college and career access challenges faced by African immigrant students. Implications for school counseling practice and research are addressed.

The Relationship Between Perceived Career Barriers and Career Decision Self-efficacy on Initial Career Choice Among Low Income, First Generation Pre-Freshman College-Bound Students

This study surveyed 106 pre-freshman college students participating in a summer bridge program at a Northeastern university. Seventy percent of the participants were first generation college students. The authors found that perceived career barriers did not significantly predict certainty of initial career choice, but career decision self-efficacy did significantly predict certainty of initial career choice. School and college and career counselors may want to consider programs and services that include early career counseling initiatives, implementation of career service programming, and career related courses geared toward increasing career decision self-efficacy for minority student populations in particular.

THANK YOU

We acknowledge the support of Dr. Christopher Tremblay and Dr. Patrick O'Connor who made it possible to launch this special edition and thank them for the opportunity to serve as co-editors. We also thank the authors whose research provides new understanding and guidance on school counseling practices that can improve postsecondary opportunities for all students.

ABOUT THE GUEST EDITORS

Dr. Laura Owen

Dr. Laura Owen, a research professor and Director of the Center for Postsecondary Readiness and Success at American University, focuses on evaluating the impact of interventions and initiatives designed to address the persistent equity and access issues that so many students across the country face. Previously, Dr. Owen was an assistant professor and director of the school counseling program at San Diego State University and held an appointment as assistant professor in counseling at Johns Hopkins University. A prior urban school counselor and district counseling supervisor, she is a passionate advocate for closing college opportunity gaps. Dr. Owen served as a consultant for the former First Lady Michelle Obama's Reach Higher Initiative and was a panelist at the Harvard White House Convening on School Counseling and College Advising where she discussed research-based approaches to college affordability, the college enrollment process, and the summer

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transition between high school and college. She co-led the San Diego White House Convening and is one of seven cofounders of the National Consortium for School Counseling and Post-Secondary Success (NCSCPS). Dr. Owen believes that all children, regardless of gender, race, socioeconomic status, or disability, have the right to receive the highest quality education available.

Dr. Cheryl Holcomb-McCoy

Dr. Cheryl Holcomb-McCoy is the Dean of the School of Education at American University. Previous to this role, Dr. Holcomb-McCoy served as the Vice Provost for Faculty Affairs and Vice Dean of Academic Affairs and Chair in the School of Education at Johns Hopkins University. She has held appointments as Associate Professor of Counselor Education at the University of Maryland, College Park and Assistant Professor and Director of the School Counseling Program at Brooklyn College of the City University of New York. Professional colleagues have recognized her with many awards for outstanding multicultural/diversity research, excellence in teaching, and exemplar service. She served as a Faculty Lilly Fellow at the University of Maryland and in 2016, she was selected as an American Counseling Association (ACA) Fellow for her significant contributions in scientific achievement and teaching/training. Because of her expertise in college advising and counseling, Dr. Holcomb-McCoy was selected to participate as a consultant to the Obama Administration's Reach Higher Initiative and

is one of seven cofounders of the National Consortium for School Counseling and Post-Secondary Success (NCSCPS). In July 2014, she was one of the plenary speakers at the White House's Summit on Higher Education held at Harvard University. She Co-Led the American University White House Convening "Connecting the Dots: Cultural Competence, Counseling, and College and Career Readiness of Underserved Youth" in November 2016.

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Brown, J., Hatch, T., Holcomb-McCoy, C., Martin, P., McLeod, J., Owen, L., & Savitz-Romer, M. (2017). *The State of School Counseling: Revisiting the Path Forward*. Washington, DC.

School Counseling Intervention Research on College Readiness, College Access, and Postsecondary Success: A 10-Year Content Analysis of Peer-Reviewed Research



Authored by

H. George McMahon, Ph.D. (University of Georgia), Catherine Griffith, Ph.D. (University of Massachusetts, Amherst), Melissa Mariani, Ph.D. (Florida Atlantic University), and Brett Zyromski, Ph.D. (The Ohio State University)

ABSTRACT

Recent demands from educators and policymakers require school counselors to ensure that students are college and career ready. In this 10-year content analysis of peer-reviewed research, investigators sought to review and describe the available intervention research designed to improve post-secondary success. Ten ($n = 10$) articles published between 2007-2016 met the inclusion criteria and were coded across the dimensions of project leadership, program goals, and research rigor. All ten intervention studies identified were implemented in high school settings, and five of the ten were large-scale, multi-modal collaborative interventions. None of the articles were published in counseling journals, and various levels of rigor were represented across the studies. Implications for researchers and school counselors are discussed.

Keywords: postsecondary education, college access, college enrollment, college and career readiness, school counseling, content analysis

The central goal of any successful educational system is to create and foster learning opportunities that promote long-term growth and potential for future generations. K-12 education is meant to teach youth how to think critically, behave responsibly, and discover ways in which they can contribute to the overall betterment of society (Finn et al., 2014). The benefits of a college degree are clear; salaries have been shown to increase with higher levels of educational attainment and unemployment decreases among those

with higher degrees (U.S. Bureau of Labor Statistics, 2014; 2015). Moreover, a robust K-12 educational system filters into a healthier higher education system later on, which in turn provides a wide variety of advantages for the larger community. These include a higher quality of life, better trained leaders for civic service, and more educated citizens to participate in a democratic society, and developing a cadre of individuals who are employable and better prepared to successfully meet the demands of an increasingly diverse workforce (Kezar, Chambers, & Burkhardt, 2005).

It has been predicted that by 2020, 65% of all jobs in the United States (U.S.) will require some form of postsecondary education (Carnevale, Smith, & Strohl, 2010). Yet, at the current rate of educational attainment, the U.S. will fall far short of the number of qualified workers to meet that need (Carnevale, Smith, & Strohl, 2014). Once a leader in terms of college completion, the U.S. now lags behind 10 other countries (Organization for Economic Co-operation and Development [OECD], 2015). Noting the



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nation's decline in educational attainment, as well as the need to stay economically competitive, the Obama Administration introduced the North Star Goal stating, "America cannot lead in the 21st century unless we have the best-educated, most competitive workforce in the world" (Obama, 2009). By encouraging educators to use data to guide curriculum and services, make better use of technology and cognitive sciences, and involve parents and students in decision making, the intent of this program was to increase public school students' college and career readiness, so that by 2020 the United States would again lead the world in college graduation rates (Duncan, 2010).

The call for a renewed focus on creating a college-going culture also led to several collaborative initiatives, such as the Reach Higher Initiative (Reach Higher, 2015) and the creation of the Council of National School Counseling and College Access Organizations (CNSCCAO). These initiatives focus on postsecondary preparation, access, and success (CNSCCAO, 2017). Though still in the beginning stages, evidence suggests increasing returns on efforts to make college more accessible (Page & Scott-Clayton, 2016). However, postsecondary education enrollment and completion rates vary across variables such as race and ethnicity, family income status, geography, and parental college attainment, and in some cases, these equity gaps have widened over time (Goodwin, Li, Broda, Johnson, & Schneider, 2016). As equity gaps in college enrollment and graduation gained attention, a slight

change in language occurred, shifting from terms such as "college and career readiness" to that of "college access," or "college persistence" (Castleman & Long, 2016). This change likely represents a subtle, yet important, shift in the conceptualization of educators' responsibility, from helping students to be ready for college, to identifying and addressing systemic barriers in an attempt to ensure that postsecondary education is a viable, accessible option for every student.

The Role of School Counselors in College Access

Former First Lady Michelle Obama created the Reach Higher Initiative to provide additional assistance to students as they navigate their path toward college and careers (Reach Higher, 2015). Although this was one of several national initiatives concerning college access created during the Obama Administration, it was unique in that it specifically focused on mobilizing school counselors as an underutilized resource in meeting the goal of increasing postsecondary success for all students (Reach Higher, 2015). The vision of school counseling as systemic support for post-secondary access and equity has been embraced by the American School Counselor Association (ASCA) and fits well with both the ASCA Mindsets and Behaviors (2014), the ASCA School Counselor Competencies (2012a), and the ASCA National Model (2012b). Furthermore, emerging evidence supports the idea that school counselors can have a significant influence on students' postsecondary

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planning; this is particularly true for African American students (Cholewa, Burkhardt, & Hull, 2015). Although the Reach Higher Initiative focused mostly on high school counselors, research also indicates that the earlier students are exposed to college and postsecondary planning the better prepared they will be to deal with workforce and life demands (Blackhurst & Auger, 2008; Dougherty, 2013). To achieve their full potential, students must be taught the necessary competencies related to positive academic, social-emotional, and career development (ASCA, 2014). Though most states now require that every student have an academic career plan on file by middle school (Trusty, Niles, & Carney, 2005), schools vary considerably in the manner, scope, and sequence in which they provide college and career preparedness curriculum (NOSCA, 2012).

Purpose Statement

School counselors have been identified as key players in promoting college access due to their unique skill sets and positions within schools; therefore, it is vital that these professionals understand the current research regarding evidence-based practice and college access interventions and that school counseling researchers contribute to that body of knowledge. Furthermore, political leaders and professional organizations urge school counselors to assume stronger leadership roles in promoting college access and persistence (e.g., ASCA, 2014; Reach Higher, 2015; U.S. Department of Education, 2014). In order to take advantage of this unique

opportunity, however, school counselors must be prepared to utilize evidence-based practices to meet the needs of their students. One way to do this is for school counselors to utilize intervention studies to identify specific school counselor practices that lead to desired outcomes (Carey & Martin, 2015).

Intervention research, defined here as investigations that determine the impact of a specific practice, intervention, or program on selected participant outcomes (Griffith & Greenspan, in press), are particularly important as we learn more about school counselor practices that help promote college access and postsecondary success. Thus, the purpose of this study was to provide an overview of contemporary intervention research related to college readiness, college access, and postsecondary success with implications for school counselors. The following research questions guided the study:

Who is conducting the research studies looking at college access programming, where are these studies being published, and when were they published?

What are the logistics behind the intervention being studied? (i.e., who facilitated the interventions, were they funded by grants or other contracts, what were the age group served, the setting, the mode of delivery, and the intervention length?)

What is the level of rigor of these intervention studies in terms of research design and data analysis?

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Method

Content analysis is a quantitative method by which mass quantities of text are reduced via a systematic, replicable technique into fewer, measurable variables (Stemler, 2001). The approach results in the detection of trends and patterns while removing subjectivity from the process. In addition, content analysis can provide a thorough overview of what is receiving institutional attention within large volumes of scholarly literature for an identified subject area. Various content analyses of school counseling-related journals have been completed (e.g., Blancher, Buboltz, & Soper, 2010; Evans, 2013; Falco, Bauman, Sumnicht, & Engelstad, 2011), many of which highlight: (a) subject matter of major interest to the scholarly community; (b) trends in research topics, design, populations, and intention of research related to the counseling field; and (c) gaps between identified needs and published materials. In the current investigation, a content analysis was determined as the most efficient means of compiling and reporting what is already known, as well as which direction the scholarly community needs to shift to in the future, about what school counselors can do to promote college readiness and access among their students.

The research team, consisting of four counselor educators from various universities, used a quantitative, descriptive content analysis strategy. They chose to limit the review to a 10-year period ranging from January 2007 to December 2016. In order to

best identify current trends in the major academic and professional fields working on college access, the team identified 20 journals across the fields of counseling, school counseling, college admissions, higher education, and educational research. The initial list was then sent to experts in the fields of higher education, college student services, and college access for feedback on their appropriateness for inclusion in the current investigation. As a result of this consultation, five journals were excluded and five were added based on the experts' opinions of the journals' rigor and reputation within the profession, as well as the likelihood they would publish manuscripts related to the topic of college access (see Appendix A on page 23). The research group then identified inclusion criteria for the articles, including: a) articles must report the findings of intervention research; b) the research must evaluate an intervention that promotes college access/enrollment or postsecondary success; and c) the research and/or the intervention must involve school counselors. It should be noted that quantitative, qualitative, and mixed methods studies were all deemed to be appropriate for analysis, provided that the inquiry focused on outcomes of a specific intervention rather than describing participants' or practitioners' experiences only. Finally, the researchers selected specific subject search terms to use when collecting articles for review (See Appendix B on page 24).

An initial search of the 20 identified journals using the ERIC database with the identified

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search terms yielded a very small number of selected articles, none of which were determined to have met the inclusion criteria after an initial review. The authors then decided to open the search to any peer-reviewed journals. In addition, the team decided to use a multi-database search and add several new search terms in hopes of casting a wider net to locate relevant articles. The inclusion criteria were kept, but the third criteria (the research and/or the intervention must involve school counselors) was slightly expanded to include interventions that fit within a school counselors' role according to the ASCA National Model (2012), regardless of whether the particular intervention utilized school counselors. Finally, the group elected to search for the selected terms in the abstract rather than in subject descriptors in order to compensate for the inconsistent use of subject terms across databases. The research team hypothesized that this strategy would result in a larger number of false positives identified within the search, but given the difficulty in finding articles in the first attempts, it was deemed preferable to error on the side of identifying more false positives rather than failing to locate articles that were appropriate for inclusion in the study.

The final search was performed using four databases: ERIC, Academic Search Complete, Education Research Complete, and PsycINFO, and was limited to peer-reviewed journals published in English between January of 2007 and December of 2016. In addition, the abstract search used a wide range of terms to help identify articles that

met each of the three core criteria: a) being an intervention research study (e.g., *evaluat** OR *experiment** OR *intervention* OR *impact* OR *investigat** OR *trial*, etc.); b) focusing on college access and postsecondary success (e.g., *“college success”* OR *“college attendance”* OR *“college access”* OR *“college admission”* OR *“college-going culture”* OR *“postsecondary success”* OR *“summer melt,”* etc.); and c) involving or related to school counselors (i.e., *school counsel** OR *guidance**). For a complete list of search terms used in the study, please refer to Appendix B on page 24. This search yielded 123 articles ($n = 123$) for potential inclusion. The first author then read through the abstracts to ensure that they met all the inclusion criteria. Based on the reading of the abstract, 14 articles ($n = 14$) were selected for detailed content analysis and coding.

Before full review of the selected articles, the research team created a codebook to guide the analysis of each article (Neuendorf, 2016). The codebook used for this study was adapted from Griffith, Mariani, Zyromski, McMahon, and Greenspan (2017). This codebook was selected as appropriate because it was specifically developed to analyze intervention research in school counseling, and provides categories for topics and goals of interventions as well as the rigor of the methodological approach and subsequent analysis. Changes to wording of categories were made to make the codebook more relevant to the current investigation. The research team discussed each change in

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category until consensus was reached for the revised codebook.

The first two authors engaged in an iterative pilot coding for three, randomly selected articles from the pool of 14. After coding those initial articles, the researchers held a consensus meeting and any discrepancies were discussed and appropriate changes were made either to the coding language or to the operational definitions of the coding criteria. At the conclusion of the first consensus meeting, it was decided that the first two authors would each code the 14 articles separately in order to enhance the rigor of the design and the stability of the findings. After the coding was completed, the researchers met for a second consensus meeting and any discrepancies in coding were negotiated until full consensus was reached across all articles; this process resulted in a Cohen's kappa score of 1.0, indicating 100% inter-rater reliability in the coding of the articles. During this process, it was decided that five of the articles in the original pool did not meet full criteria. Three did not meet full criteria because data were presented as a part of a larger overview regarding a conceptual topic, one did not meet full criteria because the data highlighted participants' experiences rather than the impact of an intervention, and one did not meet full criteria because the intervention took place in a medical school with medical students as mentors, and therefore was not considered to be in the scope-of-practice for school counselors. With the elimination of those 5 articles from the pool, the researchers were left with 9 articles to evaluate.

During the review process, the authors were made aware of an additional article that met the study criteria for inclusion. Upon further investigation, it was determined that the reason that article was not identified in the search is because the article appeared in a newer journal, *Journal of College Access*, that was not yet indexed and thus did not appear in the ERIC database. The researchers ultimately decided to include this article in the analysis because it fit the inclusion criteria. In addition, the first author then reviewed all abstracts from articles published in the *Journal of College Access*, and found one additional article that possibly would fit the selection criteria (Arnold, Chewing, Castleman, & Page, 2015); however; ultimately the article was deemed not appropriate for inclusion as the intervention described was not within the scope-of-practice for school counselors. The first and second authors then coded these remaining new article, following the same procedure as the previous analyses. This brought the final number of articles analyzed to 10.

Results

Of the 125 peer-reviewed articles identified through the search process, only 10 ultimately met the criteria for inclusion in the current investigation in that: (a) they described the results of a specific, intervention research study; (b) the intervention focused on career readiness, college access, or postsecondary success; and (c) the authors mentioned implications for school counseling. The numerous false positives were the result of the researchers use of broad abstract search

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terms (e.g., “evaluation” and “guidance”) in an attempt to limit the possibilities of false-negatives (missing articles that were relevant). The 115 articles that were identified by search terms but were excluded for not fitting the selection criteria included studies that were related to our topic but did not evaluate an intervention (e.g., surveys, data-mining, descriptive qualitative research), intervention studies related to the topic that did not have implications for school counseling practice or education (e.g., focused on interventions that could not take place in a school or could not be offered by a school counselor), or articles that included only brief overviews of interventions (e.g., book chapters and articles that mentioned interventions, but without the primary focus on presenting a research study). The remaining 10 articles (i.e., Barnard-Brak, Schmidt, Wei, Hodges, & Robinson, 2013; Castleman, Arnold, & Wartman, 2012; Castleman & Page, 2015; Castleman, Owen, & Page, 2015; McWhorter, 2007; Owen & Westlund, 2016; Parikh, 2013; Stephan & Rosenbaum, 2013; Stillisano, Brown, Alford, & Waxman, 2013; Yavuz, 2016) were subject to coding.

Table 1 (see page 15) reflects data related to the first research question (who is conducting the research studies looking at college access programming, where are these studies being published, and when were they published). The majority of journals were education-focused ($n = 8$), with most representing a specialty area within education (e.g., school counseling, policy, special education, etc.). None of the journals were solely counseling-

focused. The mean average number of authors is 2.40, and eight of the ten articles were the work of multiple authors. Notably, no two articles were published in the same journal and no articles meeting the inclusion criteria appeared in any journal between 2008-2011. Nine of the ten articles were published after 2011, while one article was published in 2007. Notably, three of the ten articles had the same first author. Nearly all of the studies were led by faculty members in higher education institutions ($n = 9$), with four of those research teams including school counselor educators. One study was led by a school counselor practitioner.

The second research question explored the logistics behind the intervention being studied: who led them, whether they were grant funded, the age group served, the setting, the mode of delivery, and the intervention length. For the most part, these interventions were led by school counselors ($n = 5$), teachers ($n = 3$), graduate students ($n = 2$), college counselors/coaches ($n = 2$), or some other combination thereof ($n = 3$). One study involved facilitation from an administrator, one study enlisted the help of outside peer mentors, and one study relied heavily on a text messaging application to deliver components of the intervention. Five of the ten studies received some form of grant funding to support the work, while the remaining five studies did not note specifically whether outside funding was received. Interestingly, all of the studies included high school students ($n = 7$) or recent high school graduates ($n = 3$). As such, all of

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Table 1.
Compilation of data related to Research Question 1.

Authors	Year	Abbreviated Article Title (first eight words)	Journal Title	Field	Spearheaded By
Barnard-Brak, Schmidt, Wei, Hodges, & Robinson	2013	Providing postsecondary transition services to youth with disabilities...	<i>Journal of Postsecondary Education & Disability</i>	Special Education, Higher Ed	Higher Ed Faculty
Castleman & Page	2014	Summer nudging: Can personalized text messages and peer...	<i>Journal of Economic Behavior and Organization</i>	Behavioral Economics	Higher Ed Faculty
Castleman, Arnold, & Wartman	2012	Stemming the tide of summer melt: An experimental...	<i>Journal of Research on Educational Effectiveness</i>	Education	Higher Ed Faculty
Castleman, Owen, & Page	2015	Stay late or start early? Experimental evidence on...	<i>Economics of Education Review</i>	Education, Economics	Higher Ed Faculty*
McWhorter	2007	At-risk students plan for successful transitions.	<i>Georgia School Counseling Association Journal</i>	School Counseling	School Counselor
Parikh	2013	Urban high school students' experiences in an afterschool...	<i>Urban Review</i>	Urban Education	Higher Ed Faculty*
Owen & Westlund	2016	Increasing college opportunity: school counselors and FAFSA completion.	<i>Journal of College Access</i>	College Access	Higher Ed Faculty*
Stephan & Rosenbaum	2013	Can high schools reduce college enrollment gaps with...	<i>Educational Evaluation and Policy Analysis</i>	Education Policy	Higher Ed Faculty
Stillisano, Brown, Alford, & Waxman	2013	The effects of GO Centers on creating a...	<i>The High School Journal</i>	Education	Higher Ed Faculty
Yavuz	2016	Exploring the impacts of school reform on underrepresented...	<i>Educational Research and Evaluation</i>	Education Research	Higher Ed Faculty*

Asterisk (*) denotes higher education faculty who are school counselor educators.

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the studies took place in a high school setting, with one study including an additional university-level site for some of the participants. Specific populations being researched included high school seniors, high school freshmen, students with disabilities, low-income students who intended to go to college, students identified to be at-risk, and youth in urban settings. Four of the interventions were intended to improve outcomes for students with low socio-economic status.

The most widely explored constructs of interest were college enrollment ($n = 5$), while other dependent variables included college persistence ($n = 1$), self-advocacy ($n = 1$), transition skills ($n = 1$), college readiness ($n = 1$), college going culture ($n = 1$), and Free Application for Federal Student Aid (FAFSA) completion ($n = 1$). One study was qualitative and explored the intervention's impact and lived experiences of the students who participated. The majority of studies ($n = 7$) included a one-on-one mode of delivery for the intervention, while others employed small groups ($n = 2$), classroom guidance ($n = 2$), and multi-modal, school-wide services ($n = 2$). In terms of intervention length, the majority were either offered for the entire academic year ($n = 4$) or longer, two-to-four years ($n = 2$). Four of the interventions were shorter in duration; three took place over six-to-ten weeks, and one study involved a 1-2 hour consultation.

Of particular interest to the research team was the level of rigor reflected in the research

design and subsequent data analysis of each study. Various factors contribute to how robust and replicable an intervention is considered to be, including whether the study: (a) is quantitative, qualitative, or mixed methods; (b) is a pilot or replication; (c) employs a standardized curriculum; (d) is a randomized controlled trial or quasi-experimental; (e) uses a control group and/or comparison group; (f) uses repeated measures; (g) gathers follow-up data to ascertain the stability of results; (h) incorporates assessment measures other than self-report; (i) has a large sample size; and (j) includes an interpretation of effect size. Table 2 contains data related to these variables.

Table 2.
Compilation of data related to Research Question 3.

n = number

Study Descriptors	n	%
Quantitative research	8	80.00
Qualitative research	1	10.00
Mixed methods research	1	10.00
Described as a pilot study	4	40.00
Standardized curriculum	4	40.00
Randomized controlled trial	3	30.00
Quasi-experimental design	6	60.00
Used a control or comparison group	7	60.00
Used repeated measures	2	20.00
Gathered post-intervention data	0	0.00
Assessment went beyond self-report	8	80.00
Sample size was over 100	7	70.00
Sample size was over 1,000	5	50.00
Reported effect size	1	10.00

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The majority of studies were quantitative ($n = 8$), though one study was qualitative, and one study used mixed methods. Four of the investigations specifically noted that the intervention was being piloted for the first time, and no investigation specifically noted being a replication study. Regarding standardization, four interventions noted having an associated curriculum, three involved facilitator training in lieu of a manual, and three made no mention of any level of standardization. While three of the studies randomly selected participants to be placed in the intervention group, control group, or a comparison group, the remaining studies employed quasi-experimental methods ($n = 6$). Of these six quasi-experimental studies, two compared outcomes with a control group, two with a comparison group, and two studies used no control or comparison group. Use of pre-post tests was less common ($n = 3$) in favor of post-test only methods ($n = 7$). No studies gathered post-intervention follow-up data.

The majority of studies did, however, incorporate data that went beyond self-report ($n = 8$; e.g., grades, test scores, application completion, college enrollment). Sample sizes ranged considerably (10 - 44,627), with seven of the ten studies involving over 100 participants. Of those, five had over 1,000 participants. One study, the phenomenological investigation, would have been unusual to have over 100 participants. Notably, four of the five studies with sample sizes over 1,000 were also grant funded. Finally, in only one study was an effect size

calculated and interpreted, with the majority of studies failing to do so ($n = 9$).

Discussion

This result of this investigation revealed several interesting issues for further investigation, some based on the results of the content analysis, others based on the difficulties which arose during the search process itself. First and foremost, procedural difficulties were encountered by the research team in finding appropriate and adequate numbers of intervention studies on college access and postsecondary success. The researchers struggled to determine which search terms to include in order to most accurately identify articles. The overall lack of success in finding a large number of fitting studies to include clearly presents challenges to the validity of this study (e.g., how many additional intervention research articles exist that we did not find?), but also calls into question the research teams' ability to adequately conduct a comprehensive literature review on college access interventions when such limited content exists along this line of research.

There are likely several factors contributing to the difficulties the researchers encountered in identifying relevant articles. First, it seems that there is little consistency in the use of subject terms among researchers in this field, both to describe the topic and to describe the research methods. This inconsistency may be exacerbated by the fact that the line of published research in college and career readiness, although small, is spread out

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among a wide range of disciplines. In addition, a newer key journal in the field of college access and postsecondary success (*Journal of College Access*) is not yet indexed through major databases, further limiting the accessibility of its important content. Scholars finding a way to use similar subject terms to identify college access and postsecondary success research articles, as well as using specific research terms to identify research methods, could help improve the validity of such literature reviews.

It is also worth noting that two initial assumptions of the research process had expected and unexpected results. Initially, although disappointing, the researchers did not expect to find a large number of intervention research articles addressing college access. This initial assumption was reinforced by the results. However, the second assumption of the researchers, that existing intervention studies would have been published in the major journals in the fields of school counseling, higher education, college access, and educational research, did not prove true. In fact, of the original 20 major journals identified by the researchers, only two of those journals published an article that met the criteria for review. And none of the journals closely associated with the relevant national professional associations (e.g., American Counseling Association, American School Counseling Association, National Association for College Admission Counseling, American College Personnel Association, Association for the Study of Higher Education, American Educational

Research Association) published any of the articles that were identified in the search. While this analysis does not provide answers as to why this might be, it certainly raises concerns about the congruence between the increased focus on college access at the practitioner level, and the lack of published intervention studies within academe.

Given that the current investigation employed an open-journal search, broad search terms, and a 10-year time span, the research team also found it notable that ultimately only ten articles fit the search criteria. It would appear as though there is no shortage of scholarly works that address college readiness, college access, and postsecondary success, nor articles that address this issue from a school counseling framework. The primary issue was the lack of studies that evaluate the outcomes of specific interventions. Moreover, many of the intervention studies found in this area were conducted by researchers outside of school counseling. This lack of intervention research in school counseling seems to be a far-reaching issue, as prior content analyses of the status of outcome research in school counseling continually indicates a dearth of investigations that examine the impact of interventions (Griffith, Mariani, Zyromski, McMahon, & Greenspan, 2017; McGannon, Carey, and Dimmitt, 2004; Whiston & Sexton, 1998). Indeed, this is an issue in the counseling field as a whole, as Ray and colleagues (2011) identified that only six percent of articles within ACA-affiliated journals examined the effectiveness of interventions. There are likely several reasons

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for this lack of intervention research in school counseling specifically and counseling generally, and it may well be grounded in a professional identity that is still evolving from a primarily practitioner orientation to a professional practice informed by evidence. The idea that a practitioner focus, and a correlating focus on practitioner-friendly journal articles (perhaps at the expense of research rigor), may hinder professional research expectations is supported by the fact that no school counseling focused journal is identified as having a journal impact factor (Thomson Reuters, 2017).

It has also been noted that, even where there is an interest in conducting intervention research in school counseling, there seems to be a lack of adequate training and experience when it comes to creating methodologically sound intervention studies (Griffith & Greenspan, in press). An inauspicious history of rigorous research coupled with school counseling programs often being isolated from programs that have a stronger history of research (e.g., counseling psychology or educational psychology) may have led to a self-sustaining cycle of school counselor educators who are better prepared to teach and supervise than to conduct rigorous research. This may lead to minimal training in research methodology, and thus lower research self-efficacy related to developing rigorous research projects (Griffith & Greenspan, in press).

Furthermore, within the current investigation's sample, there was a

concerning lack of school counselor involvement or centrality to these efforts to identify effective practices, despite college and career matters being a key component of a school counselor's scope of work with young people (ASCA, 2012). School counselors are at a disadvantage in being able to engage in best practices in this area with scant data indicating what works in schools.

The present study's findings also indicate a lack of rigor in the few intervention studies identified. Several of the studies relied on post-test only quasi-experimental design, which is troubling due to high threats to validity. Only three of the studies were randomized controlled trials, the gold standard in intervention research. Furthermore, none of the studies gathered post-intervention data, which would serve as an indication of the stability and longevity of the intervention's effects – key information in determining whether a program will ultimately be worth the time, cost, and resources to implement. Relatedly, only one study provided an analysis of effect size, which also provides needed context as to whether it is wise to implement a program. A further salient issue is related to whether any of the studies could be successfully replicated; while some articles simply do not provide enough information, the majority of studies also did not incorporate any standardized curriculum. Therefore, if the program were to be implemented at another site, vastly different results could be expected. That said, some elements of the studies were impressive in terms of rigor. Overall, the majority of

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studies incorporated ample sample sizes, (lending strength the analysis and level to which the findings can be generalized), and almost all of the studies included objective data, going beyond self-report instruments. It was somewhat surprising to the researchers that the majority of the research projects (six of ten) described were complex, school wide interventions, many involving the collaboration of several educators and lasting for an entire academic year. These studies bring up a few concerns. First of all, the complex nature of the multi-faceted interventions and collaborative teams are likely effective practice, but it makes it difficult to determine the degree to which each element of an intervention contributes to the overall results (and subsequently which are having the greatest impact). Moreover, because these interventions were not standardized for the most part, replication is nearly impossible. Finally, these studies were largely supported by grants, making it difficult for most practicing school counselors to implement the interventions without corresponding resources.

The notable exceptions to the issues stated above are the three articles authored by Castleman and colleagues (Castleman, Arnold, & Lynk Wartman, 2012; Castleman, Owen, & Page, 2015; Castleman & Page, 2015), each of which focused on interventions delivered over the summer after high school graduation. These studies stood out not only for their timing, but also for the simplicity of design and efficiency in terms of both lower financial costs and limited strain on resources.

This raises an interesting question about the relative merits of large scale, year-long collaborative programs compared to smaller, more focused and nimble interventions that can be implemented with relative ease. Regarding the focus and goals of the intervention, it is interesting to note that six of the ten studies focused at least partially on goals that are realized after high school graduation (five studies identified college enrollment, and one study identified college persistence as of sophomore year in college). Of the remaining four studies, one focused on building transition skills in students. This may be an example of the shift in focus from college readiness to college access and persistence, as the evaluation of the (slim) majority of these programs is based not on being ready for college, but in the actuality of attending and persisting college. Similarly, the fact that all of the interventions in the current investigation were focused on high school students or recent graduates suggests that even though ASCA promotes the idea that preparing children to be college ready should start in elementary school, that idea does not appear to have yet been translated into interventions – or at least not into published research studies. Further work promoting the importance of designing and evaluating elementary and middle school programs to promote college access is necessary.

Limitations

One of the potential limitations to the validity of this study is related to the research team's difficulty finding intervention research

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articles in the initial search attempts. Although the researchers took great care to re-examine their approach in order to design a search strategy that successfully identified fit for inclusion, it is not clear how many false negative articles might still exist. Therefore, the authors cannot say with absolute certainty that this represents an exhaustive analysis of intervention research studies related to college access. Furthermore, although the number of articles identified is small, a simple counting method does not take into account the impact that any single research article may have had on the field.

In addition, this content analysis includes recent articles (as recent as December 2016), but it cannot account for the current research projects underway, or for the intervention research articles that are currently in the publication pipeline, which can be quite long (12-36 months)

for some journals. As the focus on college access is still a fairly new emphasis, as is the call for evidence-based practice and intervention research in school counseling, it may be that there are several intervention research articles in preparation to be published in the next few years.

Implications for School Counselors and School Counselor Educators

Perhaps the primary implication of this study is to shine a light on the need for school counselors and school counselor educators to take an active role, even a leadership role, in: a) designing and implementing college access interventions; and b) researching and disseminating their findings. Several of the interventions that were reviewed in this content analysis included components that would fit well within a comprehensive school counseling program, with goals that are

consistent with the ASCA Mindsets and Behaviors, and which contained appropriate avenues for school counselor advocacy, leadership, and collaboration. Yet, in the majority of these articles, school counselors were tangential players in the intervention and rarely cited as being part of the research team.




“There may be great benefit to be had from counselor educators encouraging their doctoral students to conduct college access/postsecondary success intervention studies for their dissertations.”

Likewise, there may be great benefit to be had from counselor educators encouraging their doctoral students to conduct college access/postsecondary success intervention studies for their dissertations. Not only would it help add to the knowledge base in this important field that clearly lacks intervention research, but it would help doctoral students be more marketable for having complete intervention research on a timely, and likely fundable, topic area. It will also be important to ensure

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these dissertation studies get published, and to pursue publication in school counseling and counseling journals. This will help the doctoral students, but will also help to educate other counselors and school counselors about the role school counselors can play in college access and postsecondary success interventions. This is particularly important given that many counselors may not be reading the education-focused journals or journals outside of the field of education in which these studies are currently being published.

The lack of school counselor leadership in research has implications for school counselor preparation programs as well. School counseling preparations programs are professional degrees, and although research is included as one of the eight common core areas of counseling curriculum according to the Council for Accreditation of Counseling and Related Educational Programs (CACREP, 2016), it is unclear the degree to which school counseling graduates see research as part of their part of their professional identity. To have a topic that is so timely be under-researched should be not only a call to the profession of school counseling to conduct more research and to disseminate the findings, but should also be a call to counselor educator programs to infuse the process of research and dissemination to advance the profession as a core feature of school counseling professional identity. 

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Appendix A

Selected Journals

College Access Intervention Study Content Analysis

8/26/16

Professional School Counseling (ASCA)

Journal of Counseling & Development (ACA)

Journal of College Counseling (ACCA)

Journal of College Admission (NACAC)

Journal of College Student Development (ACPA)

Journal of Student Affairs: Research and Practice (NASPA)

Review of Higher Education (ASHE)

Journal of Higher Education (Ind)

Journal of College Access (MCAN)

American Educational Research Journal (AERA)

Educational Researcher (AERA)

Educational Leadership (ASCD)

Urban Education (Ind)

Journal of Diversity in Higher Education (APA)

Journal of School Counseling (Montana St.)

Journal of College Student Retention: Research, Theory, Practice (Ind?)

Theory into Practice (Ind)

Contemporary Issues in Education Research (The Clute Institute)

Journal of Research on Educational Effectiveness (SREE)

Research in Higher Education Journal (Academic and Business Research Institute, AABRI)

Italics: Identified by experts in College Student Affairs and Higher Education

Appendix B

Final Search Terms

In Abstract:

"college success" OR "college attendance" OR "college outcomes" OR "college access" OR "college admission*" OR "college preparation" OR "college preparedness" OR "college acceptance" OR "college enrollment" OR "college participation" OR "college readiness" OR "college attainment" OR "college affordability" OR "college intending" OR "college counseling" OR "college entry" OR "access to college" OR "college-going culture" OR "postsecondary success" OR "postsecondary education" OR "postsecondary attendance" OR "postsecondary outcomes" OR "postsecondary access: OR "postsecondary admission" OR "postsecondary preparation" OR "postsecondary preparedness" OR "postsecondary readiness" OR "postsecondary enrollment" OR "postsecondary attainment" OR "postsecondary affordability" OR "postsecondary intending" OR "postsecondary counseling" OR "postsecondary entry" OR "access to postsecondary" OR "financial aid" OR "summer melt"

AND

In abstract:

control OR evaluat* OR experiment* OR intervention OR impact OR investigat* OR trial OR "single subject" OR "multiple baseline" OR "action research" OR "repeated measures" OR replication OR outcome OR pilot OR pretest OR post* OR quasi* OR random* OR effect*

AND

IN abstract:

School Counsel* OR Guidance*

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Increasing College Access through the Implementation of Naviance: An Exploratory Study



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ABSTRACT

High school counselors play a key role in increasing students' access to college. With increasing student-to-counselor-ratios as well as demands on their time, school counselors often lack the ability to provide adequate college counseling. In this article, we explored how school counselors can use educational technology, specifically the online program Naviance, to supplement college counseling in an effort to increase college access for all students. Results showing that students who logged in to Naviance more frequently had higher college application rates indicated that Naviance is an appropriate way for school counselors to promote college access.

Keywords: Naviance, college access, college counseling, educational technology

A college education has never been more important. Identified benefits of a college education range from lower unemployment, increased ability to compete in a global marketplace, better health, and increased earning potential (King, 2016). In fact, Abel and Deitz (2014) reported that during their working lives, individuals with a bachelor's degree made approximately \$1 million (56%) more and individuals with an associate's degree made approximately \$325,000 (21%) more than high school graduates. In addition, according to the U.S. Department of Education (n.d.), a college

education is vital for socioeconomic advancement. Choosing a major with a good return on investment such as engineering (21%), math/computer/health (18%), and business (17%) is an important step in accessing college (Abel & Deitz, 2014). However, students need information beyond the potential physical, psychological, and economic benefits when exploring college options.

School counselors are tasked with helping students obtain the knowledge and information necessary for them to make an informed decision regarding college application and enrollment (Akos, Lambie, Milsom, & Gilbert, 2007; Bryan, Moore-Thomas, Day-Vines, & Holcomb-McCoy, 2011; Belasco, 2013). Originally, counselors were placed in schools to help guide students through the career and college exploration process. Over time, school counselors have seen their role in schools expand from college and career counseling to include administrative duties as well as being campus mental health experts (McDonough, 2005). In addition to being overwhelmed with responsibilities that leave little time for



Naviance Exploratory Study

college counseling, student to school counselor ratios have ballooned to a national average of 491:1 (American School Counselor Association [ASCA], n.d.). With all of these responsibilities and increasing caseloads, school counselors often allocate less time and attention to college counseling (McKillip, Rawls, & Barry, 2012). However, both ASCA (2013) and current research (Belasco, 2013; McKillip et al., 2012) emphasize the importance of college counseling; therefore, it should receive more attention.

One way that school counselors can increase the availability of information and resources related to college access is by utilizing online technology (Steele, Jacokes, & Stone, 2015; White House, 2014) to implement self-service type technologies such as Naviance (Hobsons, n.d.). Naviance is a college and career readiness platform that school counselors can use to provide students with activities focused on academic planning, college readiness, and career exploration in an attempt to increase academic achievement and college access. Although Naviance appears to be gaining popularity with superintendents and school counselors nationwide, a brief search of the literature using Naviance as the key search term turned up zero scholarly articles. Whereas previous research has looked at how access to a school counselor affects college application rates (Bryan et al., 2011), the goal of this study was to explore how access to Naviance influenced college application rates.

Literature Review

Research has clearly established that variables such as gender, ethnicity, socioeconomic status (SES), and academic achievement play a role in college access. Previous research has shown a gender difference related to college access with females typically having higher aspirations and being more likely to attain their educational goals (Akos et al., 2007; Trusty & Niles, 2004). Female students are also more likely to apply to college (Bryan et al., 2011). Socioeconomic status is a particularly strong predictor of application rate with students from higher-SES families being more likely to apply to (Bryan et al., 2011) as well as enroll in college than those from lower-SES families (Belasco, 2013). In fact, Valadez (1998) found that SES was a more powerful predictor of students' desire to access college than race or gender. Research has also revealed differences between ethnicities with African American and Asian students having higher application rates than that of White or Hispanic students (Bryan et al., 2011). In addition, students with higher levels of academic achievement, typically have higher application rates (Bryan et al., 2011) and are more likely to be successful in college (Adelman, 2006).

Role of School Counselor

Provide access to information. Recent research has identified school counselors as an important resource for students as they seek to access college. From a social capital

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perspective (Coleman, 1988), through contact with school counselors, students gain important information and resources related to the process of applying to college (Belasco, 2013; Bryan et al., 2011). Belasco (2013) stated that “in the case of postsecondary attainment, information is paramount; without information, students cannot navigate and subsequently meet college entry and graduation requirements” (p. 783). Having early and continuous exposure to college information is also important for increasing college access (McKillip et al., 2012). Providing students with quality information regarding college access is key to students’ reported level of satisfaction with their school counselors (Farmer-Hinton, 2008; Kimura-Walsh, Yamamura, Griffin, & Allen, 2009). Yet, research suggests that students need more practical information pertaining to searching for colleges that are a good fit, the actual application process, and how to decide on which college to attend (Roderick, Nagoka, Coca, & Moeller, 2008). In a 2011 article, Bryan et al. explored how contact with their high school counselors regarding college information influenced students’ college application rates. They found that contact was a good predictor of college application rates, with increased contact leading to higher application rates. Students who meet with the school counselors regarding college information are also more likely to actually enroll (Belasco, 2013).

Growing up in the internet age, current students require accurate, individualized, and immediately accessible information (Steele et al., 2015). This need for rapid delivery of high volumes of information has required educators to innovate. After contemplating society’s transition from service based industries, such as travel agents to self-service technology like travel booking websites and applications, Herndon (2011) described the utilization of self-service type technologies to meet the needs of community college students. By utilizing a self-service type technology, Herndon (2011) argued that school personnel, facing limited resources, can “provide high quality information that enhances student success” (p. 28).

Assist with individual planning. In addition to providing information, school counselors often help students make curricular decisions that will not only determine the type of courses they take during high school, but also affect their access to college (Akos et al., 2007). Research has shown that students who enroll and do well in more rigorous coursework are more likely to apply to and be successful in college (Mau & Bikos, 2007; McKillip et al., 2012). Although most students have aspirations that will require some form of postsecondary education, previous research indicates that many students do not complete the appropriate coursework required to help them accomplish their goals (Akos et al., 2007; Feller, 2003). Students from lower-SES backgrounds are at an increased risk of

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enrolling in courses that are less rigorous and that do not encourage or prepare them to go to college (U.S. Department of Education, n.d.).

It is important that students make curricular decisions based on individualized information and in a way that will assist in meeting their college and career goals (McKillip et al., 2012). Steele et al. (2015) encouraged school counselors to assist students in creating online graduation plans that can be updated regularly using individualized information. Further, they encouraged this planning process to be ongoing and dynamic rather than a static event that occurs during a scheduled meeting.

Create college-going culture. In a review of research regarding the role of high school counselors for improving college access, McKillip et al. (2012) identified the need for school counselors to create a campus-wide college-going culture. Research indicates that creating a college-going culture where all school personnel communicate the importance and attainability of post-secondary education is a key predictor of whether or not students are likely to apply for college (Roderick, Coca, & Nagaoka, 2011). As part of a college-going culture, it is imperative that students have early and ongoing exposure to college information, that school counselors enlist the help of the entire faculty and staff to create a college-going culture, and that they utilize a variety of

resources to assist in providing access to college for all students (McKillip et al., 2012; Roderick et al., 2011).

Previous research has revealed that students with earlier exposure to college information are more likely to apply to college (Bryan et al., 2011). Attempting to implement college counseling at the end of high school is insufficient (McKillip et al., 2012) whereas students with early exposure to college information have adequate time to create an appropriate path to college comprised of rigorous coursework and numerous opportunities to explore their interests, abilities, and aptitudes. Hawkins (2015) recommended that college counseling begin no later than the ninth grade. Bloom (2010) stressed the impact that teachers can have on college-going culture by providing rigorous instruction as well as adopting the attitude that all students should have access to college. Finally, by implementing a variety of resources related to course planning and college access campus-wide, school counselors communicate the expectation that all students have the potential to access college (Akos et al., 2007; Steele et al., 2015).

Introduction to Naviance

Clearly, school counselors play a significant role in helping students access college. Specifically, school counselors can be an important source of social capital for students as they navigate the path from high school to college (Bryan et al., 2011). But as

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aforementioned, there are a variety of barriers that can impede school counselors' ability to provide adequate college counseling, thus limiting students' exposure to this important source of social capital (McKillip et al., 2012). Previous literature has pointed to the important role that technology, specifically online resources, should play in providing students with college information (Carey & Dimmitt, 2005; Frome, 2014; Steele et al., 2015). A specific online, self-service type program that school counselors can employ as a tool for developing skills and knowledge needed to make informed college-going decisions is Naviance (Hobsons, n.d.).

Naviance (Hobsons, n.d.) is a web-based, one-stop-shop self-service type technology that assists students with college and career readiness. Students can access it at any time, from any internet connected electronic device. It serves as a warehouse for student information including scores on college entrance exams, grade point average (GPA), and annually updated individualized personal graduation plans (PGP) for each student. Counselors help students align these PGPs with potential college majors and careers to help them recognize the connection between current curricular choices and future college and career goals. Students can build resumes, set goals, and gain personal insights and awareness through a variety of assessments housed in Naviance. Using the SuperMatch™ feature, students can do targeted college searches based on their

strengths and goals, GPA, scores on college entrance exams, and a variety of preferred college characteristics. Students can then utilize information from SuperMatch™ results as well as other college search functions to maintain a list of colleges they are considering, allowing them to compare schools. Additionally, students can request transcripts and recommendation letters, as well as link to college applications and financial aid forms provided by the school counselors, through Naviance. Students can also search careers that match individualized information gleaned from a variety of interest, ability, and aptitude inventories/assessments with career information from the U.S. Department of Labor's O*Net Online website.

Purpose of the Study

The purpose of this study was to explore how access to Naviance, an online self-service type program, influences college application rate. After review of the previous literature, we created the following research questions and made the following hypotheses:

Research Question 1: Does the length of time students have access to Naviance predict their college application rate?

Research Question 2: Does the number of times students access Naviance predict their college application rate?

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Hypothesis 1: Years of access to Naviance is positively correlated to college application rate.

Hypothesis 2: The number of times students access Naviance is positively correlated to college application rate.

Method

Participants

Participants in the study consisted of students who had graduated over the past four years from a large suburban, public high school in the southwestern U.S. The class of 2013 had 456 graduates, 2014 had 499 graduates, 2015 had 485 graduates, and 2016 had 477 graduates for a total of 1,917 participants. Of the total sample, 51% were male and 49% were female. A majority of the sample identified as white (62%), while 23% identified as Hispanic, 9% as Black/African American, 3% as Asian, 1% as American Indian/Alaska Native, and 2% as other. A minority of participants were identified as low-SES (19%). Finally, 4% of the participants were receiving special education services.

Procedure

The local school district implemented Naviance starting in the fall of 2012. Thus, each cohort had increasing exposure and access to the program with the class of 2013 having access the shortest amount of time (one year) while the class of 2016 had access to Naviance throughout their entire high

school career (four years). School counselors were responsible for implementing Naviance on the campus based on the campus implementation plan. The plan had specific goals for the campus counselors, but also encouraged them to utilize Naviance as much and as frequently as possible with students. As part of the implementation plan, counselors utilized Naviance in guidance lessons, individual planning meetings, and parent/teacher conferences. During guidance lessons, students completed various career interest and aptitude inventories such as Career Cluster Finder (ninth grade), Career Interest Profiler (10th grade), and Do What You Are (11th grade). After completing each of these assessments during guidance lessons, students then completed assignments utilizing their results such as identifying potential future careers as well as college majors and colleges that offered their potential major. By their senior year, students have completed a minimum of six personality and career assessments that they utilized to develop their personalized PGPs and explore colleges. Also based on the personality and career assessment results, students were instructed to explore projected growth, salary, and job opportunities in geographical locations where they might want to live in the future for a career in which they are interested. During guidance lessons, students had to review their current GPA and rank as listed on their Naviance home page, set academic and personal goals, as well as create a resume and keep an updated list of

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potential colleges. In addition to the college and career planning piece, school counselors utilized the Course Planner feature to have students create four-year graduation plans, similar to a college degree plan, that they were required to update each year. Students used information from their aforementioned assessments to select courses that would help them achieve their stated academic, career, and personal goals. During course selection or pre-graduation meetings, students and counselors would use the information in Naviance to help students make informed and intentional decisions that would assist students in achieving their goals. After the implementation of eDocs, a portion of Naviance that allows counselors and students to upload college application materials such as letters of recommendation and transcripts directly to colleges, school counselors required students to use Naviance to request letters of recommendation as well as transcripts.

Finally, the school counselors created an online meeting request form, only accessible through Naviance, in an attempt to increase their availability to students. By making this change, the counselors were able to eliminate the use of paper request forms, have immediate access to students' needs, and increase students exposure and proximity to important college information. Having access to transcript requests or scheduling a meeting with their counselor via Naviance increased students' control over the application process

and allowed them to work on the process when and where they chose. For example, if a student decided to work on her application at 11:30PM on a Saturday evening, she could complete her entire application, including transcript and letter of recommendation requests, all from the comfort and convenience of her home. If, during the process, she experienced a complication, she could request a meeting with her counselor via Naviance, and anticipate a meeting upon her return to school on Monday.

The ultimate goal of the school counselors as they implemented Naviance was to increase students' exposure and proximity to important information that would help them make informed college and career decisions. By having more access to information related to their current academic performance, interests, and abilities, as well as career options and the role college played in attaining their goals, students could make better post-secondary education decisions. The goal of this study was to explore how Naviance had influenced the application rate for the first four graduating classes that had access to Naviance.

Research Design

The Institutional Review Board (IRB) at the first author's university granted approval to complete this study. The school district providing the student data issued a letter of approval for the research collaboration to occur as part of the IRB process. Only

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archived data was used and all identifiable information was removed for this article in order to protect students' privacy.

We extracted all information for this project from Naviance and cross checked it against data provided by the school's registrar. The district regularly uploaded demographic information directly to Naviance from a data file created using its data information management system, eSchoolPLUS (Sungard K-12, n.d.). Socioeconomic indicators as well as GPA and student rank were also included in these regular updates. A particularly beneficial Naviance feature is the ability to run reports to access student information. Unfortunately, we encountered a few limitations that complicated our ability to secure and analyze certain variables. After consulting with Naviance technical support, we determined that we would need to run multiple reports and combine them with original data files containing demographic information in order to gather the data necessary to complete this research project. We ran a college report called "applications by student" in order to obtain application rate data. This type of report contains data regarding GPA, rank, scores on college entrance exams, names of colleges where students have applied, students' application status, and where they plan to attend post-graduation. It is important to note that students self-report the last three points of data during completion of a graduation survey. We cross checked information from

the self-reported data with data provided by the National Student Clearinghouse as part of the Naviance Alumni Tracker feature. This information is available in Naviance on students' Post-grad tab. In order to obtain student usage information, we ran a student usage report. One limitation of this report was that Naviance only provides the total visits a user has made over their lifetime of use. We discuss in detail how we handled the discrepancies in the four cohorts below. Naviance does not provide a report with specific demographics pertaining to gender or ethnicity; therefore, we had to use the original data files uploaded to Naviance for this information.

Variables

Dependent variables.

We chose to use application rate as our dependent variable based on previous research indicating a correlation between application rate and acceptance to college (Roderick et al., 2008) as well as our desire to replicate Bryan et al.'s (2011) findings using access to Naviance as an independent variable instead of access to actual school counselors. We obtained our dependent variable, application rate, using the applications by student report in Naviance. All graduating seniors were required to complete a graduation survey on Naviance. In addition to questions about their high school experience, students answered questions related to their college application process

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and future enrollment plans. As part of the survey, students updated information they had stored in Naviance related to colleges in which they were interested in and/or to which they were applying. Based on their responses, Naviance updated the number of colleges to which each respondent had applied, been accepted, and were planning to attend. Naviance also integrates enrollment information from the National Student Clearinghouse and although that information is available for these cohorts, it is beyond the scope of this initial, exploratory study.

Independent Variables.

We hypothesized that six dependent variables were likely to be good predictors of college application rate. We coded students as 0 if they were male and 1 if they were female. Socioeconomic status was coded 0 for students who were not identified as economically disadvantaged based on not qualifying for free/reduced lunch and 1 for students who were identified as economically disadvantaged based on qualifying for free/reduced lunch. The only GPA data we were able to obtain for all students using Naviance was a weighted GPA where grade points awarded for an advanced placement or honors course was given an extra point (A=5 points instead of 4 points) thus making the highest attainable GPA for a student a weighted 5.0 instead of the typical unweighted 4.0. We calculated years of using Naviance for students based on the initial implementation of Naviance and the cohort to

which each student belonged. Students in the class of 2013 used Naviance for one year, 2014 for two years, 2015 for three years, and 2016 all four years. Student usage of Naviance proved to be the most difficult variable to operationalize due to the limited information Naviance reports provide. Because each cohort's years of access varied, lifetime logins would have been an inaccurate measurement of student usage. Instead, we decided to calculate the average annual logins by dividing the number of lifetime logins provided in the Naviance report by the number of years each student had access to Naviance.

Analysis

We conducted a multiple regression to evaluate the six independent variables' ability to predict college application rate. Because this is an initial study designed to explore how implementing a self-service type program like Naviance into a comprehensive school counseling program, we determined that a multiple regression analysis would suffice. We suggest and anticipate conducting future research regarding the role Naviance plays in school counseling using additional variables and more complex statistical analyses.

Data Screening

In order to assess what factors could predict college application rate, we utilized archived data stored in Naviance from 1,917 students who had graduated in the past for years (2013

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-2016). We dummy coded the categorical ethnicity variable in order to utilize it in the analysis. No data was missing and thus we conducted a regression analysis to test our initial model using all 1,917 participants. Thirty seven outliers were detected that had an extreme standardized residual ($z > \pm 3$). We excluded these cases from further analysis.

We inspected bivariate scatterplots between the continuous predictors and application rate to verify linear relationships between variables. All continuous variables were satisfactorily normally distributed except average annual logins which was leptokurtic. To correct for this, we used a Log10

Table 1.
Regression Summary Table.

Model	Sum of Squares	df	Mean Square	F	Sig.	R	R ²	Adj.R ²
Regression	2177.16	5	435.43	161.71	<.001	.549	.301	.300
Residual	5045.98	1874	2.69					
Total	7223.14	1879						

transformation. Finally, a standardized residuals and standardized predicted values scatterplot was evaluated to assess whether the assumption of homoscedasticity was met. The scores were reasonably evenly distributed, indicating that the assumption was acceptably met and thus we proceed to conduct a multiple regression analysis using the data set.

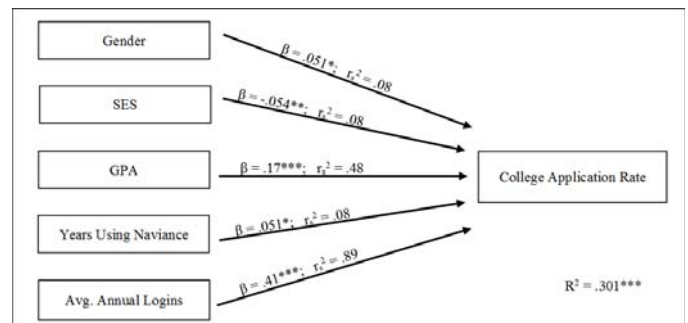
Results

Regression

In order to test our hypothesized model, we conducted a regression analysis using all predictor variables. Beta weights indicated that the dummy ethnicity variables were not a good fit and therefore removed from the model. We conducted a second regression analysis using the remaining five predictor variables to create our final model (see Figure 1 below). The result was statistically significant, $F(5, 1879) = 161.71, p < .001$. According to Cohen (1988), a large effect size of $R^2 = .301$ was calculated, meaning approximately 30% of the variance in college application rate can be explained by the predictor variables. The adjusted R^2 (Ezekiel, 1930) is 30%, indicating minimal reduction

due to theoretical correction for sampling error. Regression summary is presented in Table 1.

Figure 1.
Final Regression Model



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the strongest predictor of college application rate. It explained approximately 89% of the effect and had the largest beta weight. This combination would further indicate that not

Table 2.
Regression Coefficients for Gender, SES, GPA, Years Using Naviance, Avg. Annual Log-ins.

Variable	r_s	r_s^2	β	t	Sig.
Gender	.28	.08	.051	2.59	<.05
Socio-Economic Status	-.29	.08	-.054	-2.72	<.01
GPA	.70	.48	.17	7.45	<.001
Years Using Naviance	.28	.08	.051	2.50	<.05
Avg. Annual Logins	.94	.89	.410	17.97	<.001

Note. r_s =structure coefficient; r_s^2 =squared structure coefficient; sig.=significance.

only did the average number of times a student logged in to Naviance each year account for the largest part of the variance in the effect, but it is also likely that it accounted for the largest percentage of unique variance in effect. Grade point average was the second best predictor of college application rate explaining 48% of the effect and with the second largest beta weight. Gender, SES, and years using Naviance had the smallest beta

weights and each accounted for 8% of the effect. Exploration of the correlation matrix (see Table 3) uncovered strong correlations between these three predictors and the average number of times a student logged in to Naviance each year as well as the GPA, suggesting that Gender, SES, and years using Naviance each had a significant amount of shared variance with the other two variables.

Table 3.
Correlation Matrix for Application Rate, Gender, SES, GPA, Years Using Naviance, Avg. Annual Log-ins.

	Application Rate	Gender	SES	GPA	Years Using Naviance	Avg. Annual Logins
Application Rate	1.00	.153*	-.157*	.382*	.153*	.517*
Gender		1.00	.004	.201*	-.024	.167*
SES			1.00	-.249*	-.082*	-.137*
GPA				1.00	-.019	.461*
Years using Naviance					1.00	.249*
Avg. Annual Logins						1.00

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Discussion

According to the results, the independent variables were good predictors of college application rate. A large effect size was calculated ($R^2 = .30$) and there was little shrinkage when adjusted for sampling error (Adj. $R^2 = .30$). As we hypothesized, the average number of times a student logged in to Naviance each year was the strongest predictor. This result is consistent with Bryan et al.'s (2011) findings that students who reported having more access to school counselors for college information had a higher college application rate. They suggested making school counselors more accessible to students in order to increase application rate and college access. Our results suggest that having students utilize Naviance is also a good way to increase student exposure to college information in order to increase application rates. Also as hypothesized, level of academic achievement was positively related to application rates with students who had higher GPAs also having higher college application rates. This finding is also consistent with previous research (Bryan et al., 2011; Mau & Bikos, 2007; McKillip et al., 2012) and underscores the importance of ensuring students have access to as well as take advantage of rigorous

coursework that will increase their academic performance. Although gender only accounted for 8% of the effect, our results indicated that female students tended to have higher application rates than male students. This finding is also consistent with Bryan et al.'s (2011) results. The high correlation between gender and GPA, suggests that gender had a significant amount of shared variance with GPA. This finding is consistent with previous research that has shown that female students tend to have higher GPAs

than male students (Nord et al., 2011). Also, accounting for only 8% of the effect, the number of years using Naviance appeared to have a significant amount of shared variance with the average number of times a student logged in to Naviance each year based on the strong correlation between the two variables.

This finding is consistent with the implementation plan presented above. Over time, the counselors utilized Naviance for an increasing number of college related tasks such as college searches and transcript requests as well as in school counseling tasks such as guidance delivery and individual planning. Finally, SES, accounting for only 8% of the effect, was negatively correlated with application rate, meaning that students from lower-SES households were less likely to



“Our results suggest that having students utilize Naviance is also a good way to increase student exposure to college information in order to increase application rates.”

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apply to college. Socioeconomic status also likely had a significant amount of shared variance with GPA based on the strong correlation between the two variables. Consistent with previous research, students in our study who were from lower SES households had lower GPAs (Walpole, 2003).

Based on the data, the average number of times a student logged in to Naviance each year, GPA, years using Naviance, SES, and gender were good predictors of college application rate. The answer to both of our research questions appears to be yes, the length of time students has access to and the number of times students access Naviance both predict college application rates.

Naviance appears to be a beneficial tool for school counselors to utilize in an effort to increase their students' college application rate. Implications for how school counselors can utilize these results when implementing Naviance follows.

Implications for School Counselors

Naviance has numerous features that school counselors can use to address the college access needs previously mentioned. It provides students with a plethora of college information at their convenience, its features can be used to create individualized graduation plans with courses tailored to help students meet their college and career goals, and by utilizing it with all students in all education settings, it promotes a college-going culture. Based on the results of this

study, it appears Naviance is an effective self-service type technology that school counselors can implement to help increase students' access to college. However, due to the design of this study, it is impossible to know with certainty whether it was Naviance alone or a combination of the variables and circumstances responsible for the increase in the college application rate. It is probable, based on aforementioned previous research reinforcing the impact school counselors have on application rate, that it is the manner that the school counselors implemented Naviance that increased application rates. Therefore, we make the following suggestions for school counselors implementing Naviance in the future.

First, it is important to remember that Naviance should be a supplement for college counseling services already provided, not a replacement. During the implementation process, the counselors involved in this study inserted Naviance into college focused guidance lessons they were already providing to all four grade levels throughout the school year. They also inserted it into individual college meetings they held with every eleventh grade student as well as to create PGPs for all incoming ninth grade students. Second, counselors should make Naviance available no later than the ninth grade. Third, it is important for school counselors to make Naviance necessary for all students. The counselors involved in this study believed that making Naviance necessary would

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increase usage and students exposure to important information related to college access. They encouraged all students to search careers and colleges on Naviance as well as complete various inventories and assessments. They hoped proximity to the information would lead to exploration of that information, resulting in increased knowledge for students as they made college decisions. Fourth, school counselors should use Naviance to help students select rigorous coursework. School counselors can work with students to create individualized graduation plans utilizing the overabundance of personal information stored in Naviance. School counselors can then review students' plans to ensure students enroll in appropriate courses based on their academic ability, interests, and college and career goals. Finally, counselors need to involve all stakeholders in the implementation of Naviance. The school counselors in this study provided parents and teachers access to Naviance. As teachers became more familiar with the program, they began to utilize it with increasing frequency in class. For example, a math teacher had students use the career feature in Naviance to identify a potential career based on their interests and abilities. Students then used income data provided by Naviance to complete a finance/budget assignment. An English teacher had his students use Naviance to search for and select a potential college, identify the application requirements, and then write a college essay as their assignment.

Limitations

Although we have provided evidence that school counselors can use Naviance to increase college access, specifically college application rate, the results are limited by the sample being comprised of predominantly middle class, white students at a suburban public high school in the southwest. Another limitation of this study is that, although the results support the relationship between how often students log in to Naviance and their application rate, we cannot speak to the nature of students' activities once logged in to Naviance. In addition, it is impossible to know if students with higher application rates would have had higher application rates even without Naviance. We cannot say that logging in to Naviance more frequently causes students to apply to more colleges. It is possible that students' decisions to apply to more colleges caused them to log in to Naviance more because they had to complete certain tasks of the application process, such as transcript requests, on Naviance. However, students could make multiple transcript requests while only logging on one time. Finally, not having the access to the exact number of times students logged in during their senior year when they were applying to colleges is a limitation of the study as well as of Naviance the program.

Implications for Future Research


Future research could explore the connection between college information exploration on Naviance and college application rates. This

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would require additional information that school counselors could collect using survey features in Naviance or developers could add the ability to track specific tasks, such as SuperMatch™ college searches, completed by students. Also, having precise logins per year would have added to the accuracy of our comparisons and would also have provided a glimpse at how student usage changed during the implementation process as well as at different grade levels. Finally, this project was an initial exploratory study to see if, like contact with a school counselor, access to Naviance influenced college application. Further research utilizing more sophisticated statistical analyses and a variety of other variables is warranted. For example, it would be interesting to explore if access to Naviance influenced college enrollment. It would also be beneficial to explore how school counselors can use Naviance to close the gaps in college access underscored by the results of this study. Specifically, how can school counselors utilize Naviance to increase application rates of lower-achieving, male students from lower-SES households?

Conclusion

School counselors play an important role in ensuring that students have access to college. They help provide important information, help students make appropriate curricular choices, and foster a college-going culture on their campuses. As demands on their time and student-to-counselor-ratios increase, they have to employ creative methods to ensure

that all students continue to have access to college counseling. Based on the results of this study, it appears that Naviance is an appropriate self-service type technology that school counselors can use to increase students' access to college, specifically their college application rates. 

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English Language Learners' (ELLs) Science, Technology, Engineering, Math (STEM) Course-Taking, Achievement and Attainment in College



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ABSTRACT

Using data from the Educational Longitudinal Study: 2002, the present study examined the effects of demographic variables, high school math course-taking and high school GPA on ELL students' STEM course-taking, achievement and attainment in college. Regression analysis showed female ELL students were more likely to take more STEM courses and get higher GPAs in STEM, but less likely than males to earn a STEM college credential. Race was found to be a significant predictor of STEM GPA and attainment. The number of years taking trigonometry and pre-calculus in high school and high school GPA were predictive of the number of STEM courses taken in college. High school GPA also strongly predicted ELL college students' STEM GPA. Implications and future research are discussed.

Keywords: ELL students, STEM course taking, STEM achievement, STEM attainment in college.

Introduction

A continuing challenge for educators in the United States is to produce America's future scientists and engineers. Although the world is becoming more dependent on advances in science, technology, engineering, and mathematics (STEM) to support its technology-based economy, fewer American students are entering STEM fields of study in higher education compared with other developed countries (National Academy of Science, 2010). This results in a diminishing pool of STEM graduates with the expertise

necessary to promote economic and technological advancement. According to the President's Council of Advisors on Science and Technology (2012), the United States would need to increase its yearly production of undergraduate STEM degrees by 34 percent over current rates to match the demand forecast for STEM professionals. Thus, it is urgent to recruit more students to STEM majors in order to secure STEM human capital for the U.S. labor pool.

Although educational leaders, policy makers, and researchers have long emphasized the importance of STEM for the country's continued prosperity, increasing participation in STEM has remained a challenge for both the education and scientific communities (National Academies of Science, 2010; President's Council of Advisors on Science and Technology, 2012). A historic imbalance in STEM participation persists where proportionately fewer female and minority students enroll in STEM courses and seek employment in STEM professions (National Academy of Sciences, 2010). In terms of racial disparities among those who held a STEM Bachelor's degree in 2010, Whites and Asians together took 88.4 percent of STEM jobs while

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Blacks and Hispanics only took 9.9 percent (Landivar, 2013). Another underrepresented group in STEM are English Language Learners, a sizable subgroup (5.3 million) among the country's elementary and secondary (PK-12) students and a subgroup whose growth is outpacing that of the overall PK-12 student population (The National Clearinghouse for English Language Acquisition and Language Instruction Educational Programs, 2010). In 2011, the U.S. Department of Education Office of English Language Acquisition (OELA) published a report, entitled *High-Quality STEM Education for English Learners*. This report strongly suggests that the perceptions about English Learners need to change. Rather than perceiving them as academic underachievers, they must be seen as an untapped resource for developing a multi-lingual STEM workforce that has the potential to keep the U.S. relevant in an increasingly competitive global economy. Thus, ELL students can be an important target group to increase the STEM workforce in the U.S.

However, the current literature on ELL students' STEM major enrollment and attainment is quite scarce. Specifically, the predictors of these outcomes among the ELL population are virtually nonexistent. The purpose of this study is to investigate what background variables and high school academic preparation variables could predict English Language Learners' course-taking, achievement and attainment in STEM majors in postsecondary institutions.

Review of the Literature

Despite the importance of preparing more ELL students for considering a college major in a STEM field, the academic performance gap between English-proficient and ELL students continues to be substantial. For example, National Assessment of Educational Progress' (NAEP) 2015 math results revealed that only 11 percent of ELL fourth graders scored "at or above proficient" in math as compared to 89 percent of their non-ELL counterparts. Next, the achievement gap continues with 6 percent of eighth grade ELL students scoring "at or above proficient" in math as compared to 33 percent of non-ELL counterparts (NAEP, 2015). The most up-to-date NAEP results in science are equally disparate. For instance, in 2011, 34 percent of eighth grade non-ELL students scored "at or above proficient" in science while only 3 percent ELL students achieved the same level (NAEP, 2011).

Coupled with these statistics, the literature on ELL students' math and science education that does exist has mostly focused on curriculum development and teachers' pedagogical practices in K-12 schools (Martinez et al., 2011). Previous studies using qualitative (e.g., Radinsky, Oliva, & Alamar, 2010), quantitative (e.g., Kim & Chang, 2010), and mixed methods designs (e.g., Martiniello, 2009) all have sampling limitations. The main limitation includes most studies taking place in only one or two schools (Martinez et al., 2011).

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Predictors of STEM Participation and Attainment

A large body of literature (e.g., Crisp, Nora, & Taggart, 2009; Engberg & Wolniak, 2013; Ackerman, Kanfer, & Calderwood, 2013; Kokkelenberg & Sinha, 2010; Rohr, 2012) focused on the predictors of STEM education participation and attainment. These studies addressed a range of factors that were found to be predictive of STEM major choice: demographics, academic preparation, attitudes, high school disposition, college choice considerations, postsecondary experiences and academic environment. Most studies addressed one of these areas and targeted either pre-college or postsecondary education and experiences. Among the studies that focused on pre-college academic preparation and experience, it was found that GPA was the strongest predictor of STEM retention (Rohr, 2012) and gender, race/ethnicity, math/science course-taking and high school GPA were the strongest predictors for choosing STEM majors (Crisp et al., 2009; Engberg & Wolniak, 2013). Some studies were conducted with only students from one institution. For example, Rask (2010) examined the attrition in STEM fields at a liberal arts college and found pre-college preferences/intended major is a strong and consistent predictor for both men and women. Kokkelenberg and Sinha (2010)'s study was done with Bringhamton University undergraduate students and found that Advanced Placement (AP) coursework, math ability, gender, ethnicity, high school GPA and college experience are all significant

indicators of success in STEM majors. Besides, a study by Ackerman et al. (2013) also found AP course credits earned and the number of AP courses taken were the most important predictors of STEM major persistence. However, none of these existing studies have used ELL students as their targeting population. Therefore, there is an obvious gap in the literature on ELL students' STEM education.

Given this developing body of research and the sampling limitations, the proposed study aims to make a significant contribution to the literature by using a nationally representative sample of ELL students to explore the following research questions:

1. What background variables (SES, race and gender), and high school academic preparation variables (math course taking and high school GPA) are predictive of ELL students taking STEM courses in college?
2. What background variables (SES, race and gender), and high school academic preparation variables (math course taking and high school GPA) are predictive of ELL students' STEM achievement in college?
3. What background variables (SES, race and gender), and high school academic preparation variables (math course taking and high school GPA) are predictive of ELL students' STEM attainment in college?

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Methods

Data Source

The Educational Longitudinal Study: 2002 (ELS: 2002) public-use data was used in the present study. The ELS: 2002, a longitudinal study conducted by the National Center for Education Statistics (NCES), started in 2002 with a nationally representative sample of over 15,000 tenth graders from 750 randomly selected schools. Students were followed from the time they were in 10th grade in 2002, until they were in 12th grade in 2004 (first follow-up). A second follow-up occurred in 2006 (Ingels et al., 2007), and a third follow-up was conducted in 2012, eight years after the students' scheduled high school graduation (Ingles et al., 2014). Survey questionnaires are available on the NCES website.

The ELS: 2002 research instruments encompass three basic elements: basic background information, process information (e.g., information about the student in the home, school, and community environment, as they move through secondary school and beyond), and outcome information, (e.g., information about achievement and attainment) (Ingels et al., 2007). Data were collected from students, parents, teachers, and school administrators. The ELS: 2002 is an appropriate data source for the present study because it presents the most current longitudinal data at a national level and provides information on the educational trajectories and career pathways of ELL students.

Participants

The participants had to meet the following criteria in order to be included in the present study: 1) participated in all four waves of ELS: 2002, as well as the postsecondary transcripts data; 2) English was not their native language; 3) ever enrolled in English as Second Language (ESL) program. This procedure yielded a total of 258 ELL students to be included in this study.

Among the final sample of 258 ELL students, there were 114 male and 144 female. In terms of racial ethnicity, there were 39 White, 55 Asian, 26 Black, and 132 Hispanic students. A very small sample of American Indians students (n=1) and mixed race/ethnicity students (n=1) were excluded from the analysis due to problems with model convergence. We looked at two different variables for students' socio-economic status (SES): a continuous variable ($M=-0.50$, $SD=0.75$) was used in the data analysis and a categorical variable that could tell exactly in which quartile students' SES was located compared to non-ELL students. A majority of ELL students (n=131, 50.8%) were in the lowest SES quartile; 23.6% were in the second quartile (n=61) and a similar number of students were in the third quartile (n=38, 14.7%) and the highest (n=28, 10.9%) quartile.

Predictor Variables

Two sets of predictor variables were included in the study: (1) demographic background variables (gender, SES and ethnicity/race), and (2) high school math course-taking

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variables and a high school academic achievement variable.

Demographic variables.

Three demographic variables were included in the analysis since they were consistently found in the literature to have an impact on students choosing STEM majors in college (Moakler & Kim, 2014): gender, SES, and race/ethnicity. Gender was a categorical variable with 1 coded as male and 2 as female. Race/ethnicity was also a categorical variable and was recoded as 1=White, 2=Asian, 3=Black and 4=Hispanic. Both categorical and continuous SES variables were available in the data but this study only included the continuous SES variable in the analysis.

High school math course-taking variables.

Students were asked a question "From the beginning of ninth grade to the end of this school year, how many years of math coursework will you have completed in each of the following subjects?" Students could only count courses that meet at least three times a week for at least one-half year, including summer school and advanced placement classes. For this study, four advanced level high school math courses as have been commonly used in previous research were included (Trusty & Niles, 2003): Algebra II, Trigonometry, Pre-Calculus, and Calculus. There were four choices students could choose from: 1=None or less than ½ year, 2= ½ year, 3=1 year, and 4=More than 1 year. This variable was treated as continuous.

High school academic achievement variable.

There was only one variable in the ELS: 2002 data that measured the academic achievement in high school: GPA for all the courses taken in the 9th through 12th grades. It was a categorical variable in the ELS data. In this study, we treated it as continuous since it was measured on a seven-point scale, with each point representing a bracket of GPA.

Outcome variables.

Outcome variables in this study include (1) STEM course-taking in college; (2) STEM achievement in college; and (3) STEM attainment in college. All three outcome variables came from the postsecondary transcripts data that was collected in 2013.

STEM Course-Taking in College.

In this study, we used a variable that asked students "number of known STEM courses taken in college (using NSF definition)." It is a continuous variable in the data.

STEM achievement in college.

In this study, a variable that asked students' "GPA for all known STEM courses (using NSF definition)" was used. It is a continuous variable in the data.

STEM attainment in college.

In the present study, we used a variable from the postsecondary transcripts that asked if students ever earned a postsecondary (PS) credential in a STEM field as of June 2013 using NSF grant definition, to measure students' STEM attainment. Students had three options to choose: no PS credential in a

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STEM field, undergraduate credential in a STEM field, and undergraduate and graduate credential or graduate only credential in a STEM field. In this study, this variable was recoded into having only two categories in the answer: 0=no PS credential in STEM, and 1=PS credential in STEM.

Weight

Analytic weights were used in the ELS: 2002 to account for the complex survey design and to produce estimates for the target population with appropriate standard errors. Based on the guidelines provided by Ingles et al. (2014), the panel weight variable (F3BYPNLPSWT) was used in this study because the present study included the analysis of the base year data in combination with the third follow-up data, as well as the postsecondary transcripts data. However, since F3BYPNLPSWT is raw weight, design effect adjusted weight was created in the present study to account for the complex multistage sampling design in the ELS: 2002. The design effect adjusted weight was calculated by dividing the normalized weight (product of the raw weight and the ratio of the sample size to the population size) by the design effect (DEFF) of a similar variable to the outcome variable in the study (Hahs-Vaughn, 2005). We used the design effect of the variable "ever attended a postsecondary school" (DEFF=2.12), which was the closest to our outcome variables related with STEM attainment and achievement, in the computation of the design effect adjusted weight (Ingel et al., 2014).

Sample Size

A power analysis was conducted using an online sample size calculation software by Soper (2015). With an anticipated effect size of 0.15, desired statistical power level of 0.8, and a probability level of 0.05, the minimum required sample size was 108 for the present study with three predictors in the first stage hierarchical regression analysis and five predictors in the second stage, above and beyond the first stage. With listwise deletion to treat missing data in this study, the final analytic sample size was 202 in the multiple regression analysis and 212 in the logistic regression analysis, which was considered sufficient to yield meaningful results.

Data Analysis Procedure

All data in this research were analyzed using SPSS v23.0 (IBM Corp, 2013). Prior to conducting any data analysis, we created a master dataset including only selected variables this study used from the ELS: 2002 and also the variables created by the researchers. First, we ran descriptive statistics, including getting the frequencies for all the categorical variables and means and standard deviations for all the continuous variables. Then, we conducted two multiple regressions with STEM course-taking and STEM achievement in college as the criterion variables and a binary logistic regression with STEM credential attainment as the criterion variable.

In the regression analysis, we entered predictors in two different stages. At stage

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one, we entered gender, SES, and race/ethnicity. At stage two, we entered high school math course-taking variables and high school academic achievement variable (high school GPA). This way of conducting regression analysis allows for gauging indirect effects in the models (Trusty & Niles, 2003). That is, it is likely that demographic variables have effects on the high school math course-taking patterns and high school academic achievement, which in turn have effects on students' STEM course-taking and attainment in college.

For the missing data, we used the default missing data treatment method in SPSS v23-listwise deletion (Grace-Martin, n.d.), because of the larger sample size available in the dataset. Therefore, all the results in this study were based on the original data.

Results

Descriptive analyses were first conducted with all the predictor variables and dependent variables. Results for each research question begin on page 57. Table 1 (page 57) presents descriptive statistics results. Table 2 (page 58) includes all the regression results.

Research Question 1:

What background variables (SES, race and gender), and high school academic preparation variables (math course taking variables and high school GPA) are predictive of ELL students taking STEM courses in college?

As shown in Table 2, for Model 1 with the STEM course-taking as the criterion variable, gender stayed statistically significant in both stages, meaning gender had largely a direct impact on the number of STEM courses taken in college by ELLs. Since female was coded the value 2 and male was coded the value 1 and the regression coefficient was positive, female ELL students were more likely to take a larger number of STEM courses than male ELLs. The other two demographic variables (race and SES) were not significant in the model. Therefore, gender itself contributed significantly to the criterion variable, $F(3, 201) = 3.86, p < .05$. After controlling for students' gender, SES, and race, the following three predictors were found statistically significant: years of taking trigonometry, years of taking pre-calculus, and high school GPA in the 9th-12th grades. The regression coefficients for these three predictors were all positive, indicating students with more years of taking trigonometry and pre-calculus and a higher GPA in high school were more likely to take more STEM courses in college.

Regarding effect sizes, the R^2 in the first stage regression model (with only the demographic variables) was .06 and the R^2 in the second stage regression model (with the high school math course-taking and high school GPA variables) was .29. Therefore, gender alone explained 6% of the variances in the number of STEM courses taken in college by ELL students. Years of taking trigonometry and pre-calculus and high school GPA together explained an extra 23% of the variances in the

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number of STEM course taken in college.

Research Question 2:

What background variables (SES, race and gender), and high school academic preparation variables (math course taking variables and high school GPA) are predictive of ELL students' STEM achievement (STEM GPA) in college?

In both stages of Model 2 (with the STEM GPA in college as the criterion variable), three demographic variables stayed statistically significant, indicating their effects on STEM GPA in college were largely direct. Gender had a positive regression coefficient, while SES and race/ethnicity's regression coefficients were negative. This meant that female ELLs were more likely than male students to have a higher STEM GPA. ELL students who were from a higher SES were more likely to earn a lower STEM GPA. With one-way ANOVA, we found that Hispanics ($M=2.25$) earned a statistically lower GPA than White ($M=2.67$) and Asian ($M=2.61$). After controlling for demographic variables, only high school GPA was statistically significantly predictive of STEM GPA in college.

Regarding effect sizes, the R^2 in the first stage of the model was .11 and the in the second stage of the model was .26. Therefore, all three demographic variables (gender, race and SES) together explained 11% of the variances in the criterion variable and high school GPA alone explained an extra 15% of the variances in

STEM GPA above and beyond the variances explained by demographic variables.

Research Question 3:

What background variables (SES, race and gender), and high school academic preparation variables (math course taking variables and high school GPA) are predictive of ELL students' STEM attainment in college?

See Table 3 (page 59) for results of the logistic regression model examining the effects of demographic variables, high school math course-taking variables and high school GPA variable on STEM attainment in college. A test of the full model against a constant only model was statistically significant, indicating that the predictors as a set reliably distinguished between ELLs who earned STEM credentials and those who did not ($\chi^2=25.334$, $p<.01$ with $df=10$).

The effects of race/ethnicity and gender variables were statistically significant in both stages. Black ELL students were significantly more likely than ELLs from other ethnic groups to earn a STEM credential in college; while Hispanic ELL students were significantly less likely than students from other ethnic groups to earn a STEM credential in college. Interestingly, in this model, the regression coefficient for gender became negative, which indicated that in college male ELLs were more likely to earn a STEM credential than females. However, none of the math course-taking variables or high school GPA were found significant in this

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model.

Pseudo effect size, Nagelkerke R^2 in stage 1 was .11 and in stage 2 was .17. Therefore, demographic variables alone explained 11% of the variability in the criterion variable; adding math course-taking and high school GPA only explained an additional 6% of the variances in the criterion variable above and beyond demographic variables. Of the 212 ELL students in the logistic regression analysis, 62.26% had attained a STEM credential and 30.19% had not. The full logistic regression equation correctly classified 93.2% of the students who did not earn STEM credentials and 29.1% of the students who earned STEM credentials. The overall percentage of correctly classified participants was 72.4%.

Discussion

The present study used a nationally representative sample to examine the effects of demographic variables, high school math course-taking and high school GPA on ELL students' STEM course-taking, achievement and attainment in college. In this study, the impact of gender was significant in all three models meaning gender was influential to the amount of STEM courses taken, STEM GPA and final STEM degree attainment for ELL students.

However, previous research indicated gender was not a significant predictor for choosing an engineering major (Tyson, 2011) or for STEM persistence among high-achieving students (Anderson & Ward, 2013). A possible explanation for this contradictory finding could be that the population for this study is ELL students, while previous research focused on either general student population or high-achievers. When interpreting this result, it is important to consider the differences between ELL students and

general student population. In a recent longitudinal study (Hao & Woo, 2012), among those best students and later the most successful young adults were born in foreign countries and came to the U.S. before reaching their teens. Hao and Woo (2012) also suggested a greater sense of community and more inspiration among immigrant community

could explain the more positive trajectory for foreign-born children. Other resilience factors that previous research found to play an important role in ELL students' academic achievement included self-regulation, religious faith, and parental support (Kumi-Yeboah, 2016).

Another interesting finding from this study regarding gender was that in the first and second model, we found female ELL students



“In this study, the impact of gender was significant in all three models meaning gender was influential to the amount of STEM courses taken, STEM GPA and final STEM degree attainment for ELL students.”

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were more likely to take more STEM courses and get higher GPAs in STEM. However, in the third model, females were found to be less likely than males to earn a STEM credential in college, which was consistent with previous research (Kokkelenberg & Sinha, 2010; Whalen & Shelley, 2010). Then the question is, what caused female students who took more STEM courses and also did well in STEM courses to leave or drop from STEM majors in the end? Several factors might play a role in this phenomenon: college experience and college environment (Espinoza, 2011) and female students' math/science self-concept (Ackerman, Kanfer & Beier, 2013).

Additionally, it is important to consider the cultural expectations and gender roles of ELL female students. In Asian and Hispanic cultures, women are expected to devote themselves to the satisfaction of everyone else's needs and complete denial of their own and women are not expected to wish for more than being a housewife (Comas-Diaz, 1988). These cultural expectations might have shaped female students' views, perceptions and decision-making process. However, there is no previous literature that has directly identified the impact of cultural expectations of female students on their STEM achievement or attainment in college.

Although race was not a significant predictor of STEM course taking, the ANOVA result indicated that Black ELL students were taking significantly more STEM courses than Hispanic ELL students. Race was found to be a significant predictor of STEM GPA and attainment. Hispanic ELL students were more

likely to earn a lower GPA than White and Asian ELLs. In terms of STEM credential attainment, Black ELL students were the first and Hispanic ELLs were the last in the ranking. The research findings in the literature about STEM persistence among different race/ethnicity groups were quite inconsistent because previous studies used different populations and focused on different criterion variables. However, in this study, it seems to be consistent that Hispanic ELLs tended to earn lower grades in STEM courses and were also least likely to get a STEM degree from college. This finding could be explained by the commonly identified predictive power of STEM GPA, especially in the last registered term (Whalen & Shelley, 2010).

In this study, ELL students from higher socio-economic status were more likely to earn lower GPA in STEM, which implies that low SES students do not necessarily achieve at a lower level than other students. Furthermore, in the present study, SES was not a significant predictor of the number of STEM courses taken by ELL students and STEM credential attainment. This result is consistent with previous research conducted by Anderson and Ward (2013) that found SES was not a significant predictor of STEM persistence for high-ability students regardless of their ethnicity.

In terms of high school courses and high school GPA, we found the number of years taking trigonometry and pre-calculus in high

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school was predictive of the number of STEM courses taken by ELL students in college. Previous research also found math course-taking in high school was a strong predictor for students choosing STEM majors (Engberg & Wolniak, 2013). In this study, we found high school GPA strongly predicted ELL college students' STEM course-taking and STEM GPA. This finding is consistent with previous research that supported GPA was the strongest predictor of choosing STEM majors and STEM retention and success (Kokkelenberg & Sinha, 2010; Rohr, 2012).

Implications

Considering the current state of STEM education, in which a comparatively limited number of students enroll in STEM majors and earn STEM degrees from college, it is critically important to understand how to improve overall enrollment in the STEM disciplines and how to enhance students' STEM achievement and attainment. This study provides several important implications for education policy. First, school counselors could attend to ELL students' course-taking patterns in high school and ensure that ELL students are well represented in advanced level math courses, such as, trigonometry and pre-calculus. Educators should work to remove as many barriers as possible for ELL students to enroll in advanced math courses in high school. School counselors are well-positioned to address the diverse social, emotional and developmental needs of this student population and provide career counseling and guidance (American School

Counselor Association, 2012). Second, educators need to address the gender gap in terms of STEM attainment. Support and resources should be provided to female students, especially during college, to make sure that they have an encouraging college environment and experience, which is an important factor for them to stay in STEM disciplines (Espinosa, 2011). Also, when working with ELL students from lower SES families, educators could encourage students by sharing with them the result from this study about lower SES students who were more likely to earn higher STEM GPA in college. Third, ELL students should not be viewed as one group in educational settings because various research, including the present study, has found in-group differences, such as, gender, ethnicity and SES (National Education Association, 2008). Therefore, it is important for educators and policy makers to create and implement tailored programs for different sub-groups within ELL students in order to ensure their unique needs and issues in their personal and academic development are addressed. Fourth, counselor educators in school counseling programs could consider incorporating topics related with ELL students' postsecondary experience into their courses and provide graduate students more opportunities to be exposed to ELL student population to enhance both their knowledge and skills. Lastly, graduate students in school counseling programs are encouraged to learn through readings and experiential activities about ELL students and try to be better prepared to provide support and assistance in

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Furthermore, this study used the ELL student population as a whole without testing group differences based on ethnicities. However, based on the results from this study, gender and race/ethnicity are critical factors in ELL students' STEM achievement and attainment in college. It is important for future researchers to conduct group comparison studies based on gender and ethnicities. Also, the present study did not include psychological factors (such as, personality traits, interest, self-efficacy, etc.) and environmental factors (such as, exposure to STEM, school and home environment, etc.). Lastly, the ESL: 2002 data are from more than ten years ago and information included in the data might be dated. Readers need to keep this in mind when interpreting the results. Some examples of research questions that future researchers could focus on include (a) what academic variables in high school are predictive of ELL students' STEM achievement and attainment in college? (b) what college experience variables are predictive of ELL students' STEM achievement and attainment in college? (c) what psychological factors are predictive of ELL students' STEM achievement and attainment in college? (d) what are the differences among ELL subgroups based on gender and ethnicity in terms of STEM achievement and attainment and the predictive factors in high school and college? When future researchers are trying to study these questions, it is recommended to use more updated national data if available. 

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Table 1.
Descriptive Statistics by Linguistic Background (Unweighted).

	Min	Max	M	SD
SES	-1.97	1.72	-.49	.74
Years of Algebra II	1	4	2.09	.95
Years of Trigonometry	1	4	1.29	.65
Years of Pre-Calculus	1	3	1.31	.68
Years of Calculus	1	4	1.15	.52
High School GPA	0	6	3.61	1.47
STEM GPA	0	4	2.42	.93
Number of STEM Courses	0	72	14.01	12.96
Valid N	183			
	No STEM Credential in College		STEM Credential in College	
STEM Attainment	173 (67.3%)		77 (30%)	
Valid N	251			

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Table 2.

Summary of Hierarchical Multiple Regression Analysis for Variables Predicting STEM Course-Taking and STEM Achievement in College among ELLs

Model 1 (Number of STEM Courses Taken in College as Criterion Variable)							
Predictor Variable	<i>b</i>	<i>SE b</i>	β	<i>t</i>	<i>R</i>	<i>R</i> ²	ΔR^2
Stage1					.24	.06	.06*
Sex	5.93	1.89	.22	3.14**			
SES	-.44	1.33	-.03	-.33			
Race	-1.44	.86	-.13	-1.67			
Stage2					.54	.29	.23***
Sex	3.99	1.71	.15	2.33*			
SES	-1.00	1.18	-.06	-.85			
Race	-.02	.79	-.00	-.03			
Algebra II	1.38	.93	.10	1.49			
Trigonometry	5.19	1.37	.24	3.79***			
Pre-Calculus	3.18	1.43	.16	2.22*			
Calculus	3.40	1.76	.13	1.94			
HS GPA	1.59	.65	.18	2.43*			
Model 2 (STEM GPA in College as Criterion Variable)							
Stage1					.34	.11	.11***
Sex	.49	.13	.26	3.64***			
SES	-.20	.10	-.17	-2.08*			
Race	-.20	.06	-.25	-3.05**			
Stage2					.51	.26	.14***
Sex	.37	.13	.20	2.86**			
SES	-.20	.09	-.16	-2.16*			
Race	-.14	.06	-.18	-2.31*			
AlgebraII	-.12	.07	-.13	-1.74			
Trigonometry	-.11	.10	-.08	-1.14			
Pre-Calculus	.70	.10	.06	.70			
Calculus	.14	.12	.08	1.11			
HS GPA	.22	.05	.37	4.60***			

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Table 3.
Summary of Hierarchical Regression Analysis for Variables Predicting STEM Attainment in College among ELLs

	Step1		Step2	
	<i>B</i>	Odds Ratio	<i>B</i>	Odds Ratio
Sex	-1.07**	.34	-1.08**	.34
SES	.08	1.08	-.003	.99
Race ¹	-1.55*	0.21	-.82*	.44
Race(1)	.01	1.01	-.22	3.83
Race(2)	.12	1.12	-.30	.74
Race(3)	1.42**	4.13	1.34*	3.83
AlgebraII			-.02	.98
Trigonometry			.48	1.62
Pre-Calculus			.31	1.34
Calculus			.57	1.77
HS GPA			-.08	.93
Constant			-1.73	.18

¹ Hispanic group was the comparison category; the B coefficient was calculated as the negative sum of the other categories; and the odds ratio was calculated from the B coefficient.

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Career Decision-Making and College and Career Access Among Recent African Immigrant Students



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ABSTRACT

The number of African immigrant youth in American classrooms is on the rise. School counselors are uniquely positioned to help these students to be college and career ready. Using the Social Cognitive Career Theory framework, this article aims to address the unique career development needs, college and career access challenges faced by African immigrant students with an emphasis on high school students, and recommends strategic interventions for school counselors helping this population navigate career choice and determination. Implications for school counseling practice and research are also addressed.

Keywords: Career-decision making, African immigrants, barriers, high school students, college access, interventions

College and career readiness for all students is now the focus of most United States education systems (Conley, 2010). The mandate to prepare all students to be college and career ready has been supported by the former President of the United States (Barack Obama) who stated, “we must ensure that every student graduates from high school well prepared for college and a career” (U.S. Department of Education, n.d.). In fact, the United States hopes to implement policies to reclaim its lost position as a world leader in college completion by the year 2020 (U.S. Department of Education, n.d.). If this goal is

to become a reality, it behooves every state, school district, and school building to be sensitive to the career development needs of all the students under their purview regardless of race, gender, country of origin, or other demographic variables that impede equitable educational and career outcomes.

Recent United States Census data suggested that African immigrants are migrating to the United States at an increased rate (U.S. Census Bureau, 2014). Using these Census data, Mukiibi (2015) noted that the African immigrant population has risen from 64,000 to 1.6 million within three decades from 1980 to 2010. These data suggested a 2,500% increase in the immigrant population during that period. As of 2015, one out of every four Americans was an immigrant, or had an immigrant parent, and by 2065, the number is projected to rise to one in three (Pew Research Institute, n.d.). The immigrant student population has also increased rapidly. The Current Population Survey (CPS) statistics indicated that about 2.7% of the students enrolled in high school were foreign born, whereas, 5.5% were children of foreign-born parents (U.S. Census Bureau, 2015). In summary, if this trend continues, future



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immigration could change the face of America (Pew Research Institute, n.d).

Unique Career Development Needs of African Immigrant Students

Immigrant students and children of immigrants face unique challenges as they try to negotiate the education system in the United States, including the process of choosing a college and/or career (Suarez-Orozco, Rhodes, & Milburn, 2009). Adjusting to a new culture, learning a new language, developing relationships, and dealing with racial/ethnic discrimination are some of the challenges that new immigrant students have to navigate in order to be successful in American classrooms (Goy, Wahl, McDonald, Brisset, & Yoon, 2007; Suarez-Orozco et al., 2009). The shifting demographics of the American classrooms require new approaches in addressing culturally and linguistically different student populations, among whom are African-immigrants (Harushimana, 2007). Despite the increasing numbers of African immigrant students in American schools, the lack of research about the unique challenges faced by this population in their career development and choice is concerning. This article focuses exclusively on the college and career concerns of recent African-immigrant students as well as the native-born children of at least one foreign-born African parent. The article aims to address the unique career development needs of college and career accessibility challenges faced by Black Sub-Saharan immigrant students (with an emphasis on high school students), and

recommend some strategic interventions for school counselors helping this population navigate the career choice and determination.

The African Diaspora

It is important to note that Africa is a vast and diverse continent with 55 countries that are internationally recognized as members of African Union (AU), and United Nations (UN). There are over 3,000 languages spoken in Africa. There are varying histories of colonization, civil strife, and political instability in each of these countries. Additionally, there are differences in culture, ethnicity, race, traditions, economic viability, and socio-cultural factors, all of which will influence the career trajectory of African immigrants in the United States (Stebbleton, 2007). School counselors therefore need to be aware of pre- and post-immigration contextual factors that may hinder or facilitate career decision making of African immigrant students.

For many African families, a primary reason for immigrating to the United States is to provide better education and career opportunities for their children. Attending a school in the United States education system may be a life changing opportunity for African immigrant students; potentially having implications for intergenerational mobility (Crosnoe & Truly, 2011). In most cases, African immigrants enter the U.S. legally through the many visa options available including the Diversity Lottery Visa (popularly known as the Green Card), diplomat visa, student visa, visitor's visa,

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refugee/political asylum status, business visa (temporary work visa for professionals), or fiancé visa (Harushimana, 2007). At times, negative life events force immigrant students to leave their home country as refugees due to war, political oppression, disease, and/or natural disasters leading to potential for trauma responses in addition to the stress of acculturation (Stebleton, 2007). Many challenges and needs might arise as African immigrant students' make a transition to the United States. Some of the most common challenges and needs are described below:

Language proficiency. Many African immigrant students come to the United States with strong academic potential (Mukiibi, 2015) and tend to outperform their non-immigrant peers academically (Crosnoe & Truley, 2011), yet still face numerous challenges when entering the United States education system. African immigrant students may face forms of racism, discrimination, and prejudices that they did not face in their home countries (Mukiibi, 2015; Stebleton, 2007; Thomas, 2012). Crosnoe and Truley (2011) noted that despite strong academic abilities and potentials, many immigrant children would face discrimination from teachers and peers in the United States education system based primarily on their language proficiency. Language proficiency is central to the career decision-making needs of youth when you consider what language proficiency means for other's perceptions of their nationality (Mukiibi, 2015), and the subsequent beliefs and assumptions from

others might directly or indirectly influence the youth's career decision-making.

Discrimination. Many African youth are proficient in English, but may still face discrimination because of the color of their skin (Mukiibi, 2015). Black -African immigrant students are typically associated with African-American students due to skin color. This may cause dissonance since Black-African immigrant students may not know or share the cultural history of African-American youth. Furthermore, this misattribution may further isolate or mask students' culturally specific needs (Mukiibi, 2015; Thomas, 2012). In schools, African immigrant students are likely to face discrimination from teachers, administrators, and peers who contribute negative attributes to their skin color and language use. Students' futures are no more hopeful as African immigrants are likely to experience discrimination in employment as evident by the high unemployment rate among African immigrants. Of course, this factor may also be impacting students' families, an important aspect of their ecological field (Mukiibi, 2015), as well as impacting family socioeconomic status, which in turn can influence if, when, and how African immigrants go on to post-secondary education (Crosnoe & Truley, 2011).

Acculturation. African immigrant students typically face the idea of navigating dual cultures as they make the transition into the United States education system (Watkinson & Hersi, 2014). Mukiibi (2015) purported that African immigrant students struggle with

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addressing dual cultures in terms of their parental cultural expectations and peers/friends acceptance. African parents typically expect youth to maintain collectivistic cultural values, while United States peers/friends typically expect the youth to adopt individualistic cultural values. Maintaining traditional cultural values and incorporating new cultural ideals can cause significant stress for African immigrant students in terms of their identity development (Mukiibi, 2015).

Navigating the education system. The United States education system can be completely different from the education systems in African immigrant students' home country (Mukiibi, 2015). Challenges of navigating the education system arise when we consider the student's language proficiency, race, and level of acculturation. African immigrant students must adjust to the new learning environment such as: the structure of the school, the educational approaches in the classroom, and the sequence of educational events (e.g., course sequencing, graduation requirements, college planning, etc.) (Harushimana, 2007). Crosnoe and Truley (2011) and Mukiibi (2015) both suggested that navigating the education system becomes less challenging based on the African immigrant student's family supports and the family's understandings of the United States education system.

Career Decision Making Process

There is a notable lack of research on the career decision making process of African-immigrant students in the United States;

therefore, very little is known about how this particular population constructs their career interests. A review of the literature found no empirical contributions addressing career decision making for African immigrant high school students. Corollary studies investigating career development concerns for immigrant students from other collectivist cultures (e.g., Chinese immigrant students) may provide limited insight into the processes of African immigrant students. This lack of research with African-immigrant students is a wake-up call for empirical studies to help explain the unique career development needs and decision making for this population. According to Super's (1990) developmental theory, adolescence is the stage of career exploration, during which the adolescent form general vocational goals, through awareness of their resources, contingencies, interests, values, and plan for a preferred vocation. Career development tasks at this stage include crystallizing and specifying occupational preferences, and implementing the selected choice (Niles & Harris-Bowlsbey, 2017). Such a process may be difficult for any adolescent without the guidance of a mature adult who understands the intricacies of the career decision process (Watkinson & Hersi, 2014). Subsequently, it is certainly more difficult for a recent immigrated African-student who may have little to no understanding of the different college and career opportunities that are available to the youth (Vu & Walters, 2013). Career decision making is an uphill task that will definitely require the assistance of the school counselor

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to navigate. School counselors need to be aware of the contextual factors that influence career decision making for African-immigrant students (Watkinson & Hersi, 2014).

One of the major tasks of high school students is to plan and make career decisions regarding post-secondary career options (Mei, Wei, & Newmeyer, 2008). In order to make such decisions, students are required to have an understanding of self as well as obtain help with occupational information. School counselors play a key role in career planning and development and in helping prepare high school students in planning for their post-secondary career options (Mei et al., 2008). School counselors need to understand the unique factors that influence African immigrant career decision making in order to design effective career intervention programs to assist this population.

Factors Influencing Career Decision Making among African-Immigrant Students

The following are factors influencing career decision making for African immigrant students; notably the interplay between family and cultural norms, the acculturation process, and potential marginalization of immigrant families are key factors important for school counselors to be aware of (Yakushiko, Backhaus, Watson, Ngaruiya, & Gonzalez, 2008).

Family Influence

Several studies found family influences to be a major contributing factor in career decision

making among African students (Kim, 1993; Leong & Chou, 1994; Shen, 2015; Workman, 2015). For example, a study conducted by Kochung & Migunde (2011) with Kenyan high school students revealed that family members were more influential in career choice compared to other persons. Parents explicitly or implicitly convey their career expectations to their children often exerting familial pressure that is perceived as a key factor in career decision making (Ma & Yeh, 2005; Ma & Yeh, 2010; Workman, 2015). Similar to findings about Asian immigrant families (Ma & Yeh, 2005; Ma & Yeh, 2010), African immigrant families tend to have high educational expectations of their children and consequently put a lot of pressure on their children's academic performance (Stebbleton, 2007; Workman, 2015).

African immigrant family values and expectations also influence career decision-making processes of the youth (Shen, 2015). For example, the family may value prestige over interests in a career and explicitly or implicitly exert influence to push their children to choose careers that are deemed socially prestigious and well paying. Within a collectivistic framework, this value structure works to ensure economic survival and the ability of the children to take care of ageing parents (Okubo, Yeh, Lin, Fujita, & Shea, 2007). As children grow older, and become more acculturated to the individualistic mainstream culture, they may desire to find personal fulfillment versus pleasing their parents/operating from a collectivistic system of cultural norms (Okubo et al., 2007).

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The tension of acculturation within the career decision-making process can lead to intergenerational conflict, and consequently lead adolescents to indecision about making an academic or career choice (Ma & Yeh, 2005). However, the amount of pressure will vary depending on the ethnicity, family structure, acculturation level, socio-economic status, gender role socialization, intergenerational conflicts, and birth order of the youth among other factors (Okubo et al., 2007). Regardless, youth are likely to face challenges to reconcile parental career expectations with their own career interests (Ma & Yeh, 2005). Ultimately, African-immigrant students might choose careers that will fulfill individualistic concepts of self and/or allow them to financially support their families and give back to the community (Stebbleton & Diamond, 2016).

Cultural Values

Within many immigrant communities, certain careers are considered to be more valuable or hold more prestige than others (Okubo et al., 2007; Shen, 2015). Careers such as doctors, lawyers, engineers, and architects are held in high regard and presumably well paid. Consequently, parents may tend to value these and encourage their children to pursue such prestigious and secure occupations (Shen, 2015). Therefore, besides considering their own individual career interests, African-immigrant students may have to consider familial and cultural values and expectations when making career decisions (Stebbleton, 2007).

Gender Role Expectations/ Socialization

Immigrant parents might often have different career aspirations for boys and girls. A study by Mei, Wei, and Newmeyer (2008) found differences based on gender in self-efficacy and career decision making of high school students. They reported that girls had interest and higher self-efficacy for occupations that involve working with people and expressing oneself (Social and Artistic codes, in Holland's Typology). On the other hand, they found boys to have more interest and high efficacy for occupations that involved data and things (Realistic, Conventional, Enterprising and Investigative codes; Mei et al., 2008). In many African cultures, clear-cut gender role assignments occur at a very early age. Girls learn that they are caregivers and might tend to lean more toward careers in the helping profession such as nursing, teaching, and counseling. Boys tend to receive societal messages that they are the providers and protectors of their family, subsequently choose careers that are more masculine and well paid to maintain their status. However, the influences of gender seem to be weakening with time. For example, Kochung and Migunde (2011), found that gender was not a major factor in career decision-making among Kenyan high school students.

Cultural Identity/level of Acculturation

Career decisions may be markedly different for peers based on their levels of acculturation and ethnic identity. Intergenerational conflicts between students and their elderly family members may hinder them from

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discussing career related concerns with their family (Okubo et al., 2007). Students may turn to other sources for career information. However, it is important to note that children born in the U.S. by immigrant parents tend to be more acculturated than their immigrant counterparts. Being more assimilated may mean that they are more vocal, assertive, and independent (Okubo, et al., 2007). Such values may compete with the traditional African values of humility and respect for the elders; consequently resulting in more intergenerational conflict (Okocha, 2007). It is important to examine how the balance of two cultures influence career decisions making for African-immigrant students (Stebleton, 2007). African-immigrant students have to navigate between their home and school cultures, which can create competing ideas about careers (Okubo et al, 2007). Although the American culture reinforces the quality of independence in decision making without involving others (Ma & Yeh, 2005), African culture demands consulting and listening to the family members when making major decisions such as career choices and future plans.

Academic success might have a different meaning from an African perspective in comparison to an American perspective. Career indecision can be construed to mean immaturity from a western perspective (Ma & Yeh, 2005); however, such indecision among African immigrant students may be rooted in the cultural expectations of their community; requiring the youth to consult their families before making decisions (Okocha, 2007).

Assessing career maturity of African-immigrant students from a Western theoretical perspective can lead to a biased perception. Subsequently, school counselors might perceive immigrants as less mature when compared to their white counterparts (Ma & Yeh, 2005).

Role Models/Significant Others

Some African-immigrant students may not be living with their immediate family members and hence lack social support especially during career decision-making processes (Watkinson & Hersi, 2014). Not having family to consult with regarding such decisions is one impediment in college and/or career decision-making. Furthermore, a lack of role models within the family (i.e., someone with a college degree) can affect the career decision-making process of young immigrant students who may view college as not a necessity for their survival or in the best interest of caring for family intergenerationally (Watkinson & Hersi, 2014; Yeh, Okubo, Ma, Shea, Ou, & Pituc, 2008).

Financial Challenges

Some students may fail to make career decisions to pursue college for fear of lack of finances to pay for college education (Gibbons et al., 2006; Vu & Walters, 2013). Stebleton and Diamond (2016) suggested that students might experience anxiety about college debt and the prospect of meaningful employment to pay back the loan. Such students may opt to work upon high school graduation or even choose to go to a two-year college (Vu & Walters, 2013).

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Individual Factors

Race, gender, first-generation student, family support, and legal status identities may affect an individual's career decision-making process (Stebbleton & Diamond, 2016). English language fluency and perceived barriers such as fear of discrimination due to their immigration status, and minority ethnic status may affect their educational and career goals (Ma & Yeh, 2010). Some students may avoid selecting college majors and careers that require a high-level mastery of English for fear of not meeting the expectations (Stebbleton, & Diamond, 2016).

Career Decision Making Approaches

Social Cognitive Career Theory (SCCT)

Few empirical studies can be found that provide an evidential basis for career work with African immigrant high school students, therefore we recommend Social Cognitive Career Theory as the starting foundation for conceptualizing work with this population. Lent, Brown, and Hackett (2000, 1994) conceptualized Social Cognitive Career Theory (SCCT) to describe how career interests, goals, and behaviors are influenced by contextual factors (i.e., unique person inputs and environmental conditions), learning experiences, and the individual's self-efficacy and outcome expectations based upon these learning experiences. Although each of these factors are interrelated with one another, SCCT is helpful in school and career counseling to effectively conceptualize the impacts and influences of each; particularly

when working with marginalized populations (Morris, Shoffner, & Newsome, 2009).

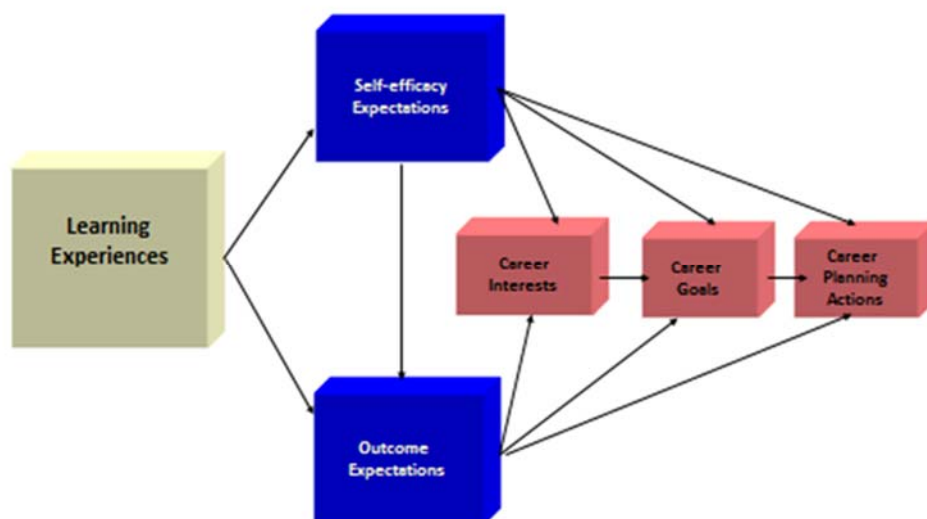
Bandura's (1986) triadic reciprocal model is a key component of understanding the complex relationships of SCCT. The triadic reciprocal model describes how learning experiences lead to the development of and relationship amongst self-efficacy beliefs, outcome expectations, and personal career goals and decision-making behaviors. Self-efficacy beliefs are "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). Outcome expectations describe what an individual expects to happen if they take an action including extrinsic reinforcement (i.e., tangible rewards), self-directed consequences (i.e., pride in accomplishment), or outcomes resulting from the activity itself (i.e., receiving admiration from others). Personal career interests, goals, and planning actions help individuals organize themselves and signify one's determination to obtain a particular outcome (Lent et al., 1996). Figure 1 on page 70 provides a conceptual model of the triadic reciprocal model as it relates to the larger SCCT framework.

The relationships described in Figure 1 are largely buffered from cultural differences; instead, they describe a very human process linking learning experiences to outcomes. This process does not happen in a contextual (i.e, cultural) vacuum, in fact contextual factors greatly influence this learning-through

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-outcomes process. SCCT conceptually envelops this learning process within three key components of external factors: (a) Unique Person Inputs, (b) Environmental Conditions, and (c) Contextual Influences proximal to choice behavior. Let us look at the three contextual factors from the vantage point of working with African immigrant students making career decisions.

Figure 1.
Conceptual Model of the Triadic Reciprocal Model Unique Person Inputs.



SCCT acknowledges the importance of person-centric factors or inputs such as predispositions, gender, race/ethnicity, and disability or health status as influencers of career development and decision-making. Situating these person-centric inputs within the broader context of African immigrant status might create a list of additional unique

person inputs for African immigrant students including country of origin (e.g., Kenya, Nigeria), family systems of support (e.g., collectivistic attitudes, proximity to family based on immigration status), adherence or oral traditions (e.g., acculturated to African oral traditions or acculturated to U.S. traditions for talk therapy), experience with Western colonialism (e.g., economic outlook, education system experiences), and problem-solving preferences (e.g., collectivist/ community-centric preference versus Western individualistic preferences).

Each of these factors affects the counseling/ advising relationship and the process of career development and decision-making.

Distal Factors/ Environmental Conditions

Background factors present throughout the career development process (i.e., at a distance from choices or actions) “affect the learning experiences through which career-relevant self-efficacy and outcome expectations

develop” (Lent et al., 2000 p. 37). Distal factors influence the perceived and real opportunity structure within which students are experiencing career development and making career decisions. An apt example is the Deferred Action for Childhood Arrivals (DACA) policies as applied to student financial aid for higher education whereby policy changes are prohibiting foreign-born

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students who reside permanently in the United States from achieving their postsecondary goals. For African immigrant students, distal factors such as family socioeconomic background, U.S. immigration policies, and school afforded opportunities (e.g., ELL programs, knowledgeable staff) influence career development and decision-making.

Proximal Factors

Whereas unique person inputs and distal factors influence the context within which develops career interests, goals, self-efficacy expectations, and outcome expectations, proximal factors play a moderating role at the time when a student is ready to develop their career interests into career goals or take action on their career goals (e.g., turning an interest in science into the goal of becoming a veterinarian and then turning that goal into an application to veterinary school). SCCT posits that students will be less likely to move through this interest-to-goal-to-action sequence when they perceive their efforts to be impeded by adverse environmental factors (e.g., insurmountable barriers or inadequate support systems). Conversely, the perception of beneficial environmental factors (e.g., ample support, few barriers) is predicted to facilitate the process of translating one's interests into goals and goals into actions" (Lent, Brown, & Hackett, 2000, p.38).

Career Development Strategies for School Counselors (Interventions)

Career interventions need to take a holistic approach that addresses unique person inputs, distal/ environmental conditions, and proximal factors because immigrant students may express poor self-concept and low self-efficacy with regard to a number of careers (Okocha, 2007) based on factors unique to their context. School counselors are in a unique position to support and empower African immigrant students as they navigate the career decision-making process; but special consideration unique to their context must be incorporated into existing methods. Following are broader implications for working with this student population and specific intervention strategies.

Unique Person Inputs Strategies

Knowledge of Student's Background. School counselors are encouraged to learn more about African history, culture, and the immigrant experience (Stebleton, 2007; Suarez-Orozco, 2010). Such knowledge of the client's culture is important in understanding their worldview (Suarez-Orozco et al, 2010). School counselors need to have an understanding of the educational challenges that immigrant African students go through and which may interfere with the post-secondary career aspirations and choices (Suarez-Orozco, 2010). To enhance their understanding of the African culture, school counselors may choose to attend cultural events organized by African student groups

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on campus or in the community. Keeping current with the happenings in Africa is key to being relevant in working with this population (Stebbleton, 2007).

Multicultural Career Competency. African-immigrant students come from diverse cultural backgrounds; being culturally competent is an imperative. First, school counselors need to be aware of their own cultural biases, assumptions, preconceived notions, and personal limitations. Second, they need to have an understanding of the client's world view. Third, counselors need to develop appropriate, relevant, and culturally sensitive intervention strategies for African immigrant students (Okocha, 2007; Stebleton, 2007; Yakushiko et al., 2008).

Distal/ Environmental Condition Strategies

Advocacy. Counselors need to advocate for their clients. Immigrants and refugees face many obstacles to career attainment such as language barriers, limited education, and discriminatory hiring practices (Stebbleton, 2007). Students need to be empowered to advocate for themselves as well (Okocha, 2007). School counselors can advocate for change in policies and practices that will offer support for immigrant students "in the form of counseling, after-school tutoring programs, homework help, internships, and summer programs so that they can obtain the academic skills and social support needed to engage in a rigorous academic curriculum" (Watkinson & Hersi, 2014, p.52).

Consultation and Collaboration. To effectively serve this population, school counselors will need to consult and collaborate with a wide variety of organizations including educational institutions, social service agencies, banks, businesses, child care centers, mental health development centers, and prospective employers (Okocha, 2007; Vu & Walters, 2013). Developing partnerships with local community agencies (e.g., mental health agencies, universities, youth development programs, and faith based organizations) will be necessary to work together and provide needed services for immigrant students and their families (Surazez-Orozco et al., 2010). More importantly, school counselors must engage with the immigrant communities and families represented by their student population to be most effective. In other words, school counselors need to possess good consultation and leadership skills (Okocha, 2007; Vu & Walters, 2013).

Parental Involvement. Research studies have shown that parents play a critical role in the career decision making of their children (Workman, 2015). Parental involvement during college and career planning is crucial for this population. School counselors need to reach out to immigrant parents for support of their children. Given that parental influence is mostly associated with the more traditionally accepted career choices such as engineering, medicine, and computer science, parental involvement would help educate parents about the variety of other career

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opportunities in the United States (Ma & Yeh, 2005). Additionally, establishing school family partnerships provides opportunities for families to access educational and college information (Watkinson & Hersi, 2014). School counselors need to plan for an extensive outreach to parents if they want to involve them in their children's career planning. Programs that bring parents and students together could be helpful, such as a career nights, or college visits (Gibbons et al, 2006). Additionally, school counselors can request parents who have been in the country longer to come in as volunteers (Mitchell & Bryan, 2007).

Proximal Factor Strategies

Assessments. Selecting assessments based on the principles, beliefs, and values of the client's culture is very important (Watson, Duarte, & Glavin, 2005). Assessment tools that address the collective and communal factors and the meaning of work relevant to African immigrants are important to consider. Very few career assessments have been normed on African populations and to our knowledge, none have been assessed specifically for African immigrant students residing in the United States. Qualitative and informal assessments such as value card sorts, narrative career assessment, life line, and life career rainbow are recommended for use with

African immigrant students (Okocha, 2007). These informal assessments provide an opportunity for a holistic evaluation of client's abilities, interests, and values as compared to objective assessments (Okocha, 2007, 2001; Stebleton, 2007).

Based on the factors we have described, we recommend the use of qualitative assessments that captures client's life stories, including their families and socio-cultural factors.

Examples of relevant career approaches include ecosystemic, narrative, values-based

and constructivist (Savickas) theories in addition to techniques such as portfolios, career genograms, autobiographical work and word sculpturing (Hutchison, 2011).

Mentorship Programs.

Pairing African immigrant students with role models from a variety of

occupations for information, guidance, and support (Ma & Yeh, 2005) would help them gain understanding of the various careers. Additionally, school counselors could also do well to match newly arrived immigrants with those students who have been in the country longer or other African children born in the country by immigrant parents for support and guidance. Linking student to free afterschool programs and mentoring services would serve as a means to community cohesion as well as to inoculate youth from



“Assessment tools that address the collective and communal factors and the meaning of work relevant to African immigrants are important to consider.”

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toxic environments in their new settings (Surazez-Orozco et al., 2010).

Small Group Intervention. Peer and group interventions may be helpful (Okubo, et al., 2007). Small groups provide much needed support as well as provide a safe place to explore cultural identities with the goal of enabling the students the ability to negotiate between the two worlds (Watkinson & Hersi, 2014).

Workshops. Workshops designed to help recent African immigrant students navigate the complex educational system-topics could range from effective study skills, college admission, (Surazez-Orozco et al., 2010), types of colleges, and college costs (Gibbons, et al., 2006), among others. In addition, such workshops would serve as the forum to disseminate information about scholarships and financial aid resources (i.e., FAFSA) and application (Gibbons et al., 2006). Furthermore, school counselors could set up mock interviews to help students practice in expressing themselves in English and to practice appropriate etiquette in an interview setting (Shea, Ma, & Yeh, 2007). Presentations by professionals and college students from the community could help demystify the college and career application process as well as help build student's self-efficacy through social persuasion (Lent, et al., 2000).

Implications for Future Research

Given the absence of information on the career development and decision-making on African-born immigrants, there is need for

more research to inform interventions. Considering the cultural values of many African immigrant families and the collectivist cultural norms, we recommend qualitative research designs focused on understanding the lived experiences of African immigrant students and separate studies focused on understanding family values, norms, and acculturation to career decision-making processes. A qualitative research design could help to provide a narrative about the specific struggles associated with African immigrant students and their families as they navigate the student's career decision-making journey. Additionally, such studies could help explain the role of perceived and actual barriers to career development and career exploration among African immigrant students. We propose methods such as phenomenological interviewing and focus groups (see Sideman, 2013) for understanding, participatory action research (see Whyte, 1991) for community involvement and change, and critical theory research (see Soloranzo & Yosso, 2002) for analysis and advocacy. We recommend that future research focus on the process across the lifespan by collecting data from African immigrant students before, during, and after the career decision-making process. Such a study could reveal how prior learning experiences may influence the career decision making process of this population.

Moreover, future research should investigate parental and/or family influences on career decision making process of African immigrant

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students. Assessing the extent to which family plays a role in choosing a college major and subsequent career will inform interventions about parental involvement. Such studies will also help to understand the role of social support to career decision making process. To further understand some of the carrier decision making difficulties experienced by this population, we recommended that future studies examine the influence of cultural identity, level of acculturation, and self-efficacy on career decision making process. Additional studies could examine if there are gender differences in career decision making among African-Immigrant students.

Further, psychometric research on career instruments used in schools using African immigrant students is required. We also recommend that future research explore the cultural values of African immigrants as it relates to the use of career related instruments and to their career decision-making process.



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The Relationship Between Perceived Career Barriers and Career Decision Self-Efficacy on Initial Career Choice Among Low-Income, First Generation, Pre-Freshman, College-Bound Students



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ABSTRACT

This study was an investigation of the predictive value of perceived career barriers and career decision self-efficacy on the certainty of initial career choice among low-income pre-freshman college students, an under-studied college population with respect to career development (Winograd & Shick Tryon, 2009). The moderating effects of certain cultural characteristics (race, gender and college generational status) on the certainty of initial career choice were also examined. A non-experimental correlational research design was utilized, along with a multiple linear regression analysis, to investigate the predictability of perceived career barriers and career decision self-efficacy, directly and as moderated by the cultural characteristics of gender, race and college generational status on the certainty of initial career choice among pre-freshmen low-income, first generation college-bound students.

Keywords: perceived career barriers, career decision-making self-efficacy, career choice, low-income students, first generation, career counseling, social cognitive career theory

Low-income, first generation college bound students are faced with unique challenges as it relates to college access, particularly in the area of college and career readiness (Engle, Tinto, & The Pell Institute for the Study of Opportunity in Higher Education, 2008;

Winograd & Shick Tryon, 2009). This population is said to lack the preparation and knowledge needed to thrive in a college environment, are often less academically prepared, and require intentional guidance and advisement to help shape their academic and career aspirations (Engle et al., 2008; Hertel, 2002; Titus, 2006; Winograd & Shick Tryon, 2009). Low-income, first-generation college students are more likely to come from racial and ethnic minority groups and enter college academically underprepared for the rigors of college course work in the content areas of reading, writing, math and science (Engle et al., 2008; Gloria & Castellanos, 2012; Storlie, Mostade, & Duenyas, 2015; Tate et al., 2015; Titus, 2006; Winograd & Shick Tryon, 2009).

As the topic of college and career readiness for historically underrepresented students continues to gain national recognition through programs like First Lady Michelle Obama's Reach Higher Initiative and former President Obama's College Opportunity Agenda (The White House Office of the Press



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Secretary, 2014), secondary and post-secondary counselors need to be prepared to support such a vulnerable, yet highly capable student population. Critical to college and career readiness is the exploration and crystallization of career choices early on (Super, 1990). Students arrive on campus from different social, economic, educational, family and cultural backgrounds, which impacts many factors related to their success in college, as well as the career choices and opportunities they see for themselves (Brown & Lent, 1996; Gordon & Steele, 2003; Luzzo, 1999; Luzzo & McWhirter, 2001; McWhirter, 1997). Students who have been historically underrepresented in higher education (e.g., low income, racial/ethnic minorities, first generation college students) are often faced with unique challenges that may impact their career choices including false realities about occupations (Burton, 2006; Gordon & Steele, 2003; Gloria & Castellanos, 2012; Lepre, 2007; Ringer & Dodd, 1999; Storlie et al., 2015; Tate et al., 2015). To that end, this study focused on the career choices of pre-freshman, college bound students from financially and educationally disadvantaged backgrounds who were admitted to college via a college access program.

Career Development in College

Traditional-aged students enter college with diverse educational experiences, a myriad of cultural characteristics, and varying degrees of exposure to the world of work. Contextual factors may impact both their beliefs and

feelings about future college experiences and career choices (Duffy & Klingaman, 2009; Gloria & Rodriguez, 2000; Engle et al., 2008; Tovar-Murray, Jenifer, Andrusyk, D'Angelo, & King, 2012). First generation college students, in particular, are said to lack the preparation and knowledge needed to thrive in a college environment naturally, are often less academically prepared and require intentional guidance and advisement to help shape their academic and career aspirations (Engle et al., 2008; Hertel, 2002; Titus, 2006; Winograd & Shick Tryon, 2009).

In recent years, universities have developed summer bridge programs to aid in transitioning of historically marginalized groups in higher education for academic remediation, to form a connection to college, and to understand explicit expectations during students' collegiate careers (Kallison & Stader, 2012; Tate et al., 2015; Tomasko, Ridgway, Waller, & Olesik, 2016; Walpole et al., 2008). While there is a body of research on first generation students and historically marginalized populations (Atherton, 2014; Hinz, 2016; Macias, 2013; Pascarella, Pierson, Wolniak, & Terenzini, 2004), there is limited research on how diverse factors impact college career choices. More specifically, the ways in which cultural characteristics might moderate between perceived career barriers and certainty of initial career choice and between career decision self-efficacy and certainty of initial career choice (Winograd & Shick Tryon, 2009). Therefore, this study

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focused on pre-freshman college students from low-income backgrounds who were admitted to college via a college access summer bridge program. The interplay between race, gender and college generational status were considered, as supported by the literature, indicating gender and race to be major influencers on the existence of perceived barriers to career decision-making and on levels of career decision self-efficacy (Luzzo, 1993; 1996; Luzzo & McWhirter, 2001, McWhirter, 1997; Trusty et al., 2000).

Theoretical Framework

Social Cognitive Career Theory

Social Cognitive Career Theory (SCCT) provides a useful framework for understanding the effects of self-efficacy on initial career choice and was used to frame this study (Albert & Luzzo, 1999; Lent, 2005; Lent et al., 1994, 2002; Luzzo, 1996; McWhirter, 1997). Grounded in Bandura's (1986) Social Cognitive Theory, SCCT describes specific mediators for learning experiences which can, in turn, influence career behaviors, including making initial career choices. In general, SCCT refers to influences among individuals, their behavior, and their environments and how these factors ultimately shape thoughts and behavior. In addition, SCCT attempts to explain the development of career interests and choices (Albert & Luzzo, 1999). Research supporting SCCT has postulated that these cognitive and contextual factors directly impact career

choices and actions (Lent et al., 1994).

Career Decision Self-Efficacy

Career decision self-efficacy has been considered a significant factor in the career development of college students for many years (Betz, 2004; Chung, 2002; Conklin, Dahling, & Garcia, 2013; Foltz & Luzzo, 1998; Gloria & Hird, 1999; Grier-Reed & Ganuza, 2012; Quimby & O'Brien, 2004; Taylor & Betz, 1983). Grounded in Bandura's (1977) concept of self-efficacy, career decision self-efficacy refers to an individual's belief that he or she can successfully complete tasks necessary to making career decisions (Taylor & Betz, 1983). Students with lower levels of career decision self-efficacy often make initial career choices primarily based on parent expectations or job and salary outlook without considering career congruence with their skills, interests, personality traits, or abilities, which lends to the need for further investigation into the certainty of career choices (Alike, 2012; Betz, 2004; Keller & Whiston, 2008; Kniveton, 2004; Wang & Castaneda-Sound, 2008). Furthermore, students with lower levels of career decision-making self-efficacy often exhibit feelings of depression, stress, and anxiety related to unclear goals and plans regarding their careers post-graduation (Lent & Hackett, 1987; Robbins, 1985; Wang, Zhang, & Shao, 2010).

Certainty of Career Choice

Career choice has been a widely-researched topic within the fields of counseling and

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vocational psychology and is considered one of the most significant developmental tasks for college students (Amundson, Borgen, Iaquinta, Butterfield, & Koert, 2010; Dik, Sargent, & Steger, 2008; Galles & Lenz, 2013; Niles & Harris-Bowlsbey, 2005). A common thread among much of the existing research is the idea that career choice is shaped by both internal and external factors, and is based upon life experiences at a given point in time (Forbus, Newbold, & Mehta, 2011; Galles & Lenz, 2013; Super, 1990). Determining levels of career certainty for pre-freshman college students may be of particular interest to counselors and administrators, as it can ultimately effect whether or not someone will solidify a college major that may lead to that specific occupation (Astin, 1993; Gordon & Steele, 2003; Ringer & Dodd, 1999). Traditional age college students tend to be at a developmental stage where they are still working to crystallize their career interests and overall self-concept, which may base their initial decisions, that is, decisions during their pre-freshman experiences, on limited life and work experiences (Chickering & Reisser, 1993; Super, 1990; Suzuki, Amrein-Beardsley, & Perry, 2012). Certainty of career choice may be related to developing career maturity, that is, the maturation of attitudes related to making career decisions (Luzzo, 1993). Savickas (1994) described career maturity as the ability to make well-informed and appropriate decisions regarding careers. Previous research with undergraduate students suggests career maturity, self-

concept, and self-efficacy are directly correlated with certainty of career choice (Farrell & Horvath, 1999).

Purpose of the Study

The purpose of this study was to identify the relationships and interactions between perceived barriers and career decision self-efficacy on the initial career choices among students in a college access program. More specifically, the primary research questions for this study were:

(1A) To what extent, if any, do perceived career barriers significantly predict certainty of initial career choice among college access students?

(2A) To what extent, if any, does career decision self-efficacy significantly predict certainty of initial career choice among college access students?

The secondary questions were:

(1B) To what extent, if any, do perceived career barriers indirectly, via the moderators of gender, race and ethnicity and college generational status, significantly predict certainty of initial career choice among college access students?

(2B): To what extent, if any, does career decision self-efficacy indirectly, via the moderators of gender, race and ethnicity and college generational status predict certainty of

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initial career choice among college access students?

Methodology

Participants

Participants were drawn from a population of pre-college freshman participating in a six-week summer bridge program at a public university in the northeast, all scheduled to fully matriculate in the fall upon successful completion of the program. Students were intentionally chosen to allow for proper investigation of initial career choices prior to beginning their college tenure. Of the 106 summer bridge students who participated in the study; 64% identified as female and 36% male, with 47% identifying as Hispanic, 38% African American, 7.5% Asian, 4.7% White, 1.9% Other, and 0.9% American Indian. As it pertained to college generational status, 70% were first generation college students and 30% were not first generation college students, while 42% came from households where a high school diploma or trade school certificate was listed as highest education level. Furthermore, the majority of participants (68%) were children of immigrants, although most were United States citizens (85%) themselves.

Data Collection and Procedures

Data collection took place during one of the mandatory weekly meeting sessions for students enrolled in the pre-college program. Prior to the meeting, the director of the

program informed students of the purpose of the researcher's visit. After introductions, the researcher, explained the study and administered all study documents, including informed consent.

Instruments

Participants completed: 1) a demographic questionnaire; 2) the Perceived Barriers Scale (McWhirter, 1997); and 3) the Career Decision Self-Efficacy Scale-Short Form (Betz & Luzzo, 1996). The surveys were completed in paper format and took approximately 10-15 minutes to complete. It is important to note that students under the age of 18 did not participate in the study. Permission was granted for the use of the survey instruments by both respective authors.

Demographic Survey. The demographic questionnaire is a researcher created survey that included questions in the following areas: a) gender, b) college generational status (e.g., yes or no to being a first-generation college student), c) race, d) parents' country of origin, e) student country of origin, f) number of people in their household, g) highest household educational level (e.g., less than high school, high school, college, graduate degree), and h) parent(s) or guardian(s) occupations.

Perceived Barriers Scale. The Perceived Barriers Scale (McWhirter, 1997), consisting of 32 questions, measuring the existence of perceived career and educational barriers was

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used in this study. Likert-type item responses range from strongly agree (5) to strongly disagree (1). The instrument is divided into two different categories (items 1-11 for career-related barriers, “In my future career I will probably...be treated differently because of my racial/ethnic background”; items 12-32 measuring educational barriers, “Not being prepared enough is...currently a barrier to my educational aspirations”). Total scores are determined by summing the responses after performing reverse scoring on the negatively worded responses. Higher scores indicate a higher perception of barriers. The scale obtained a Cronbach’s alpha of .90, with alpha coefficients of .86 and .88 for both subscales. There is a test-retest reliability of .78 over a two-month time span, yielding a stability coefficient of .72 and .68 for the two subscales (Kenny, Blustein, Chaves, Grossman, & Gallagher, 2003; Luzzo & McWhirter, 2001; McWhirter et al., 1998). Although the primary focus of this study was on the career-related barriers portion of the scale, participants were asked to complete both parts of the survey instrument.

Career Decision Self-Efficacy Scale

Short Form. The Career Decision Self-Efficacy Scale-Short Form (CDSE-SF; Betz & Taylor, 2006; Taylor & Betz, 1983), consisting of 25 questions measuring beliefs about successfully completing tasks necessary for career decision-making, was used to measure participants’ levels of career decision self-efficacy. The CDSE-SF, consisting of 25 items

is a shortened version of the original Career Decision Self-Efficacy Scale, which consisted of 50 items (Taylor & Betz, 1983). Participants select from a 5-level confidence continuum, ranging from no confidence at all (1) to compete confidence (5) in the following 5 subscales: (1) Self-Appraisal; (2) Occupational Information; (3) Goal-Selection; (4) Planning; and (5) Problem Solving (Betz & Klein, 1996). The CDSE-SF yields six scores; subscale scores for the five components of career decision self-efficacy and a total score. Total summed scores range from 25 to 125, with higher scores indicating greater levels of career decision-making self-efficacy. CDSE-SF response values for the five items for each scale are summed and then divided by 5. Scores are interpreted relative to their prediction of approach versus avoidance behavior. High self-efficacy or confidence predicts approach behavior, while low self-efficacy predicts avoidance behavior. Therefore, confidence scores are interpreted relative to the original response continuum.

Certainty of Career Choice. While there was no particular standardized instrument to measure certainty of career choice, career counselors do use an interview format to assess the degree of certainty (Durr & Tracey, 2009; Kim et al., 2014; Tracey, 2010). In order to assess certainty of career choice, a question was included in the demographic questionnaire that was similar to an interview question career counselors would use with clients to assess certainty of career choice.

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The specific question on the demographic form to serve this purpose was: Please rate the certainty of your current career choice. Participants were asked to circle the best option from the following Likert-type response: 1) I am sure, 2) I have somewhat of an idea, and 3) No idea. While this method may be viewed as a limitation of the study, it was a viable method for allowing students to self-report their sense of certainty of their initial career choices.

Data Analysis

Data was analyzed using SPSS 20.0. This study utilized a hierarchical multiple linear regression in accordance with the moderation model proposed by Baron and colleagues (Baron & Kenny, 1986; Frazier et al., 2004). Before performing a hierarchical multiple regression analysis to test for moderation (Baron & Kenny, 1986; Frazier, Tix, & Barron, 2004), statistical analyses were conducted to gather descriptive information on the sample. Statistical tests were conducted to test for and address any violations of assumptions for hierarchical multiple regression (Polit, 2010). Hierarchical multiple linear regression analyses were conducted in accordance with moderation for each research question, with the criterion variable of certainty of initial career choice. The standardized predictor variable (perceived career barriers or career decision self-efficacy) was entered on the first step of the hierarchical multiple linear regression model. The dummy-coded cultural characteristic variables of gender,

race and college generation status were entered on the second step of the hierarchical multiple linear regression model. The interaction terms of the predictor and moderating variables were entered at the third step of the hierarchical multiple linear regression model.

Results

Demographic Survey

This study surveyed 106 pre-freshman college students participating in a summer bridge program at a northeastern university. In addition to gender, race, and college generational status, supplemental descriptive data was collected on the demographic questionnaire that helps contextualize additional factors that contribute to the career decision-making process for pre-freshman students. Based on the results, almost half of the participants (42%) came from households where a high school diploma or trade school certificate was listed as the highest education level. Furthermore, most participants (68%) were children of immigrants, although most were United States citizens (85%) themselves. Interestingly to note, over half of the participants (56%) considered their parent(s) an integral part of their career decision-making process. Lastly, data were collected to determine additional factors that have helped influence career choices. Factors were chosen in the following sequential order: (1) Family; (2) Television/media; (3) Other (experiences, career research, interests and

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passion); (4) Friends; (5) Teachers; and (6) Counselors. While the demographics of the sample population was comparable to other similar college access programs in the region, results are not generalizable due to the limited sample.

Perceived Barriers Scale

The Perceived Barriers Scale (McWhirter, 1997) examined the role that perceived barriers play in the career decision-making process. Total scores were determined by summing the responses after performing reverse scoring on the negatively worded responses. Higher scores indicated a higher perception of barriers. Perceived Barriers Scale scores in this study ranged from a low of 1 to a high of 44 ($M=28.53$, $SD=8.66$).

Career Decision Self-Efficacy Scale

Short Form

The Career Decision Self-Efficacy Scale-Short Form (CDSE-SF; Betz & Taylor, 2006; Taylor & Betz, 1983), assessed how successfully an individual could complete the necessary tasks to career decision-making by considering the role of self-efficacy expectations. CDSE-SF scores were calculated by summing the response values for the 25 items. CDSE-SF scores for this study ranged from a low of 45 to a high of 125 ($M=94.38$; $SD=17.31$). Scores were then divided by 25, resulting in a score range of 3.28-4.28 (moderate to good confidence). Scale scores were interpreted using the following criteria: 3.5 or above (good confidence), 2.5 to 3.5 (moderate confidence), 1.0 to 2.5 (low confidence) (Betz

& Taylor, 2006).

Career Certainty

Certainty of Career Choice was measured using a Likert-type question on the demographic questionnaire ($M=2.30$, $SD=.76$). Results indicated 48.1% reported being sure about their current career choice, 34% reported having somewhat of an idea, and 17.9% reported having no idea.

Hypothesis Testing

Hypothesis 1A

Perceived career barriers, as measured by the Perceived Barriers Scale (Luzzo & McWhirter, 2001; McWhirter, 1997), will significantly predict certainty of initial career choice, as measured by a Likert-type question on the demographic form, among pre-freshmen college students enrolled in the summer bridge program. A linear regression was conducted to test this hypothesis. Based on the results from the linear regression, perceived career barriers did not significantly predict certainty of initial career choice, $F(1, 104) = .032$, $p = .858$, and explained 0.00% of the variance in the variable of certainty of initial career choice.

Hypothesis 1B

The variables of gender, race, and college generational status will moderate between perceived career barriers and certainty of initial career choice, among pre-freshmen college students. The interactions of perceived

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career barriers and gender, perceived career barriers and race, and perceived career barriers and college generation status were entered on the third and last step of the regression model (see Table 1 on page 87). As indicated in Table 1, the only significant model was the third model, $F_{\text{change}}(3, 98) = 5.02, p = .003$, which, based on the R^2 change value of .129, which contributed 12.9% of the variance of the dependent variable of certainty of initial career choice. When examining univariate effects, there were two significant predictors. Perceived career barriers significantly predicted certainty of career choice, $\beta(106) = .32, t(1, 105) = 2.34, p = .021$, although perceived career barriers did not necessarily predict certainty of initial career choice without testing for moderating effects of the cultural variables. Based on the coding of variables, the lower the perceived career barriers, the higher the certainty of career choice. The only other significant predictor in the third model was the interaction of perceived career barriers and college generation status, $\beta(106) = -.41, t(1, 105) = -3.51, p = .001$. Based on the coding of college generation status, being a first generation college student and having high-perceived career barriers predicted lower levels of certainty of career choice.

Hypothesis 2A

Career self-efficacy, as measured by the Career Decision Self-Efficacy Scale-SF (Betz & Taylor, 2006; Taylor & Betz, 1983), will significantly predict certainty of initial career

choice, as measured by a Likert-type question on the demographic form, among pre-freshmen college students. A linear regression was conducted to test this hypothesis. Based on the results from the linear regression, career decision self-efficacy did significantly predict certainty of initial career choice, $F(1, 103) = 7.61, p = .007$. Based on the R^2 value of .069, career decision self-efficacy explained 6.9% of the variance in the variable of career certainty.

Hypothesis 2B

The variables of gender, race, and college generational status will moderate between career decision self-efficacy and certainty of initial career choice, among pre-freshmen college students. A multiple linear regression was conducted, with the variables of gender, race, and college generation status entered on the first step of the regression model, followed by the variable of career decision self-efficacy. The interactions of career decision self-efficacy and gender, career decision self-efficacy and race, and career decision self-efficacy and college generation status were entered on the third and last step of the regression model (see Table 2 on page 88). The only significant model was the second model, where gender, race, college generation status, and career decision self-efficacy predicted certainty of career choice, $F_{\text{change}}(1, 100) = 7.79, p = .006$. Based on the R^2 change value of .071, this model explained 7.1% of the variance in the dependent variable of certainty of career choice. When examining univariate effects, the only significant

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Table 1.
Multiple Linear Regression: Gender, Race, and College Generation Status, Perceived Career Barriers, and Interaction Terms Predicting Certainty of Career Choice (N = 106)

	β	T	R	SEE	R^2	R^2_{change}	P
<i>Model 1</i>			.18	.76	.031	.031	.358
Gender	.10	1.00					.321
Race	-.11	-1.14					.258
College Generation Status	.10	1.06					.292
<i>Model 2</i>			.18	.76	.031	.000	.907
Gender	.10	.98					.329
Race	-.11	-1.22					.260
College Generation Status	.10	1.05					.294
Perceived Career Barriers	-.01	-.06					.949
<i>Model 3</i>			.40	.72	.160	.129	.009
Gender	.12	1.19					.236
Race	-.17	-1.77					.080
College Generation Status	.13	1.33					.188
<i>Perceived Career Barriers</i>	.32	2.34					.021
Gender by Perceived Career Barriers	-.18	-1.44					.154
Race by Perceived Career Barriers	.11	1.11					.272
<i>College Generation Status by Perceived Career Barriers</i>	-.41	-3.51					.001

Note. Model 1: $F_{change}(3, 102) = 1.09, p = .358$; Model 2: $F_{change}(1, 101) = .004, p = .949$; Model 3: $F_{change}(3, 98) = 5.02, p = .003$. Significant results in italics.

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Table 2.
Multiple Linear Regression: Gender, Race, and College Generation Status, Career Decision

	B	T	R	SEE	R ²	R ² _{change}	P
<i>Model 1</i>			.166	.76	.027	.027	.419
Gender	.09	.91					.366
Race	-.10	-1.00					.318
College Generation Status	.11	1.09					.279
<i>Model 2</i>			.313	.73	.098	.071	.006
Gender	.07	.72					.471
Race	-.13	-1.31					.195
College Generation Status	.10	1.04					.300
<i>Career Decision Self-Efficacy</i>	.27	2.79					.006
<i>Model 3</i>			.352	.74	.124	.026	.376
Gender	-.70	-1.31					.193
Race	-.25	-.46					.650
College Generation Status	.53	.92					.358
Career Decision Self-Efficacy	.21	1.34					.183
Gender by Career Decision Self-Efficacy	.80	1.45					.150
Race by Career Decision Self-Efficacy	.09	.16					.874
College Generation Status by Career Decision Self-Efficacy	-.43	-.74					.464

Note. Model 1: $F_{\text{change}}(3, 101) = .52, p = .419$; Model 2: $F_{\text{change}}(1, 100) = 7.79, p = .006$; Model 3: $F_{\text{change}}(3, 97) = .95, p = .418$. Significant results in italics.

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predictor in the second model was career decision self-efficacy, $\beta(106) = .27$, $t(1, 105) = 2.79$, $p = .006$.

Discussion

This study surveyed 106 pre-freshman college students participating in a summer bridge program at a Northeastern university. As it pertained to college generational status, 70% were first generation college students and 30% were not first generation college students. These statistics were comparable to those in similar college access programs across the region and country (Engle et al., 2008; U.S. Department of Education, 2012; Winograd & Schick Tryon, 2009) though results remain non-generalizable by the limited sample size.

Perceived Career Barriers and Certainty of Initial Career Choice

This study used a linear regression to test the predictive value of perceived career barriers and the certainty of initial career choice of college access program pre-freshman college students. Based on the results from the linear regression, perceived career barriers did not significantly predict certainty of initial career choice. Despite the existing research supporting the significance of perceived career barriers on the career decision-making process (Howard et al., 2010; Lent et al., 2002; Luzzo & McWhirter, 2001; McWhirter, 1997; Rivera et al., 2007; Swanson et al., 1996; Swanson & Woitke, 1997), data collected from this study failed to show a significant

relationship between perceived career barriers and the initial career choice among pre-freshman college students. These results seem to contradict the literature suggesting a strong relationship between the two variables (Luzzo & McWhirter, 2001; McWhirter, 1997). Although the data in this study seem to contradict other studies, the results must be interpreted with caution because of a smaller sample size and the fact that the students were pre-entry freshmen.

A hierarchical multiple linear regression was run to control for the moderating effects of cultural characteristics (race, gender, and college generational status) on perceived career barriers to the initial career choice of college access pre-freshman college students. Prior research suggests that these cultural characteristics have a direct impact on the existence of perceived career barriers and, in turn, could directly affect career choice (Albert & Luzzo, 1999; Lent et al., 2002; Luzzo & McWhirter, 2001; McWhirter, 1997). These results showed that, when considering controlling for the moderating effects of certain cultural characteristics, the lower the perceived career barriers, the higher the certainty of career choice. The most significant results pertained to the moderating effects of college generational status, which indicated that being a first generation college student and having high perceived career barriers predicted lower levels of certainty of career choice. Results regarding race and gender were inconsistent with the literature

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(McWhirter, 1997), as they did not appear to predict levels of certainty of career choice.

Career Decision Self-Efficacy and Certainty of Initial Career Choice

The results from the linear regression indicate career decision self-efficacy did significantly predict certainty of initial career choice, which is consistent with supporting literature that positive relationships between career decision self-efficacy and career choice (Betz, 1994, 2004; Betz & Taylor, 2006, Conklin, et al., 2013; Foltz & Luzzo, 1998; Grier-Reed & Ganuza, 2013; Lent & Hackett, 1987; Taylor & Betz, 1983). In relation to the moderating effects of the three characteristics (race, gender, and college generation status), it appeared that race and gender played some role, although results were not statistically significant to show up when tested individually. Results from this study seem to conflict with other empirical studies that addressed similar questions where racial and ethnic variables did serve as predictors of career decision self-efficacy (Gloria & Hird, 1999). Despite the conflicting literature, very little research exists examining all three cultural characteristics (race, gender, college generational status) simultaneously.

Moderating Results

Regarding perceived career barriers, this study failed to identify any significant relationships between perceived career barriers and certainty of initial career choice among college access pre-freshman college

students. When considering the moderating effects of certain cultural characteristics, there were some interactions when testing all three cultural variables at once (race, gender, college generational status); however, when measured individually, the only significant variable when testing for the predictive value of perceived career barriers to certainty of initial career choice was college generational status. One reason this may have occurred with this sample population may have to do with participants' understanding of their own gender and racial identity development. Similarly, their lack of experience in the workplace may speak to their lack of understanding regarding discrimination. It is also important to note that the sample population were all high-achieving students who chose to go to college; thus, results were influenced by the homogeneity of this group of first generation college students. With respect to career decision self-efficacy, although results from this study did show career decision self-efficacy to be a significant predictor to certainty of initial career choice, there was not much significance when factoring in cultural variables individually. In other words, race did not moderate between career decision self-efficacy and certainty of initial career choice, gender did not moderate between career decision self-efficacy and certainty of initial career choice nor did college generational status alone. However, when all three variables were tested simultaneously, cultural characteristics did show some moderation between career

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decision self-efficacy and certainty of initial career choice.

Implications for Practice

This study is about the implementation developmental task, via an educational choice, in Super's (1990) exploration stage of career development. More specifically, it focused on a special minority population, college access students, in the pre-enrollment stage of their college careers. Therefore, suggestions for implications for practice center on the career development needs of these students, as well as other similar minority populations.

P-20 Counselors

Results from this study potentially have implications for any educational/counseling professional who is able to help enhance the career development within special

populations of college students, such as college access students. Although these results cannot be generalized because of the limited sample and sample size, the findings may provide insight into working with non-college access populations who may have similar demographic characteristics, such as racial and ethnic minority students, students from financially disadvantaged backgrounds and first generation college students.

As stated previously, the results of this

research can inform career counselors and other educational professionals about factors that may be contributing to the initial career choices of minority students both in high school and in initial college entry; thus helping them decide on appropriate interventions to enhance the initial career choices of these students. Because adolescence is the stage of career exploration involving crystallization, specification, and implementation (Super 1990; Zunker, 2006), school and college career counselors may

find the data interesting, particularly as it relates to the positive relationship between career decision self-efficacy and initial career choice. Since there is a significant relationship, they can consider career-related interventions that would enhance this relationship.

School and college career counselors may also

consider programs and services that include early career counseling initiatives, implementation of career service programming, and career-related courses geared toward increasing career decision self-efficacy for minority student populations in particular. For example, researchers have proposed that exposure to role models in students' fields of interest can serve as highly beneficial to increasing career decision self-efficacy (Alike, 2012; Betz, 2004; Conklin et al.,



“School and college career counselors may also consider programs and services that include early career counseling initiatives, implementation of career service programming, and career-related courses geared toward increasing career decision self-efficacy for minority student populations in particular.”

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2013; Dockery & McKelvey, 2013). Therefore, school and college career counselors can use this data to aid with the planning of career-related interventions that would expose students to professionals in a variety of fields who may come from similar cultural backgrounds to mitigate career decision self-efficacy. Career-related interventions should focus on helping students understand their values, interests, personality traits and skills (Niles & Harris-Bowlsbey, 2005; Zunker, 2006). This can positively impact career decision self-efficacy by empowering students to seek information about themselves and career-related information during their early years in college.

Limitations

Several limitations may have impacted the overall results of this study. First, the sample population used was limited to one university within the Northeast region of the United States. Second, the size of the sample and sampling method (i.e., convenience) may have impacted the data. This study was limited to only one college access program rather than including other access programs in the local region. Although the demographics of the university were comparable to that of similar studies, results may not be generalizable to other colleges and universities. Third, amongst the sample population of first generation college students, all students were high-achieving students who decided to attend college. Consequently, results are non-generalizable to

first generation college-bound students who struggle academically and decide not to attend college. This study can be improved by using a larger sample population across various universities within the region and nationally. Next, based on the non-significant findings regarding perceived career barriers, it was evident that some of the questions on the Perceived Barriers Scale (McWhirter, 1997) may have been too complex for pre-freshman college students, and the lack of comprehension of scale content may have skewed the data. Lastly, the lack of an assessment tool that was longer and standardized to effectively measure certainty of initial career choice may have impacted the results of this study.

Recommendations for Future Research


Although the findings from this study can foster a better understanding of factors influencing the initial career choices of college access students, more research is warranted to better understand the career development of college access students, a representative population comprised of multiple minority identities. Specifically, additional research exploring the relationship between perceived career barriers and career decision self-efficacy and their impacts on the career decision-making process is recommended. In addition, more information is needed about the effects of certain cultural characteristics (race and gender) on the career decision-making process, since this study did not show any significant impacts on initial career choice

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when measured individually, with the exception of college generational status. Moreover, although race, gender, and college generation status were the primary cultural characteristics mentioned throughout existing literature, it may be worth assessing the moderating effects of additional characteristics. For instance, since we know that college generational status played a significant role in the existence of perceived career barriers in this study, parental/guardian influence may play a role in career choice among college access students. As previously mentioned, parental involvement and encouragement is considered on the most influential factors when considering overall college experience, including academic and career decision making (Forbus et al., 2011; Hertel, 2002; Holcomb-McCoy, 2010; Titus, 2006). To that end, additional research investigating family influence on certainty of career choice is strongly recommended.

Conclusion

Within the past two decades, a significant amount of research has emerged addressing the role of perceived career barriers on the career decision-making process for high school and college students (Albert & Luzzo, 1999, Brown & Lent, 1996; Lent et al., 1994, 2002; Luzzo, 1993; Luzzo & McWhirter, 2001; McWhirter, 1997; Swanson & Woitke, 1997). In conclusion, this study highlighted two major influencers on the career decision-making process for pre-freshman college bound students; perceived career barriers and

career decision self-efficacy. Supplemental data was provided to emphasize the moderating effects of certain cultural characteristics (race, gender and college generational status). This study added to the limited research on college access populations and provided enough evidence to support a continued focus on the unique career development needs of such a population. Furthermore, this study highlighted the significance of cognitive and contextual factors influencing career decisions, including the perception of career barriers, levels of self-efficacy, and cultural characteristics (i.e., race, gender, college generational status), as postulated by Social Cognitive Career Theory. Data gathered should inform practice for school and college career counselors, administrators and counselor educators. Lastly, results from this study may help to catapult future research focused on the impact of career development on the overall college student experience among special populations like pre-college freshmen and other minority student populations. 

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The Effects of Purpose Orientations on Recent High School Graduates' College Application Decisions



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ABSTRACT

Using the 2002 Educational Longitudinal Study database, the authors examined the different types of purpose orientations amongst a nationally representative sample of adolescents and the effect of these purpose orientations on high school graduates' college application decisions. Results indicated four types of purpose orientations: career, interpersonal, altruistic, and self-oriented purpose orientations. Only career purpose orientation was positively related to high school graduates decision to apply for college. Implications for school counseling and research are discussed.

Keywords: Purpose in life, purpose orientations, college enrollment, college Outcomes, career counseling

Supporting all students to successfully access college and fulfill their career goals is one of the most important goals in the current era of education reform. School counselors play a critical role towards fulfilling this goal through their role in motivating and influencing students' educational outcomes and career decisions (Bryan, Moore-Thomas, Day-Vines, & Holcomb-McCoy, 2011; Herr, 2000; McKillip, Rawls, & Barry, 2012). Posner (2002) stated, "It is a tricky business trying to guess what experiences will motivate an individual to intellectual achievement" (p. 316). Several scholars have engaged in research to identify the factors that motivate students to apply for college. For example,

Holland and Farmer-Hinton (2009) emphasized social support, personalized student attention, and ongoing formal and informal conversations that help students to understand the various facets of preparing for, enrolling in, and graduating from post-secondary academic institutions as key factors to promote college-going culture. According to Damon (2008), one of the key factors that distinguish adolescents who feel motivated to fulfill their future goals and those who do not lies in whether they have found a compelling purpose in life. Damon (2008) stressed that "the pursuit of purpose can organize an entire life, imparting not only meaning and exhilaration but also motivation for learning and achievement" (p. 34).

A sense of purpose could serve as a source of motivation for high school students to apply to college through providing them with a deeper reason to fulfill their current and long-term goals. Research has demonstrated that young people with greater sense of purpose show higher motivation to learn (Bronk, 2008). In fact, when adolescents and young adults are certain about their life's purpose, they are more likely to persist toward college education (Allen & Nora, 1995). Moreover, clarity about purpose in life helps students to



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develop positive characteristics such as grit and ability to persevere in fulfilling important goals such as achieving a college degree (Hill, Burrow, & Bronk, 2016). Since high school students' future expectations, hopes, goals, and purpose influence their decision to pursue college (Spohn, Crowther, & Lykins, 1992) and persist during college (Hill, Burrow, & Bronk, 2016), it is important to explore the relationship between their life's purpose and college application.

Purpose is defined as a "central, self-organizing life aim that organizes and stimulates goals, manages behaviors, and provides a sense of meaning" (McKnight & Kashdan, 2009, p.242). Purpose is a central, life aim that lasts across time and contexts, and can support students in persevering toward fulfilling their career and academic goals (McKnight & Kashdan, 2009). Research has demonstrated a positive relationship between purpose commitment and adolescents' positive affect, hope, happiness, contentment, and motivation to work toward their ultimate aim (Bronk, Hill, Lapsley et al., 2009; Burrow & Hill, 2011). A significant correlation has also been found between high school students' sense of purpose in life and measures of academic success such as GPA and mental ability (Martin & Martin, 1977). However, in spite of the positive role that purpose plays, the traditional education system provides very little support for school students to fulfill their quest for meaning and purpose behind school activities (Damon,

2008). Critics have complained that even if our society has made significant advancements in education, we have not yet supported students in examining the relationship between their educational pursuits and larger purpose, which could strengthen their commitment to learning (Damon, 2008).

Due to the lack of emphasis on purpose in educational settings, a dearth of empirical work on the construct exists. Moreover, most of the existing studies have mainly focused on measuring the extent to which youth are aware of their purpose and not the content or nature of their purpose. The few studies that have focused on adolescents' content or nature of purpose have demonstrated that different types of purpose influence adolescents' developmental and educational outcomes differently (Hill, Burrow, Brandenberger, Lapsley, & Quaranto, 2010). Hill et al. (2010) referred to different types of purpose as "purpose orientations." Given that different types of purpose may differentially predict students' wellbeing and achievement (Hill et al., 2010), it is critical for researchers to examine the relationship between different purpose orientations and college outcomes. Leppel (2005) examined the effect of different types of purpose on students' college decisions and found that students whose purpose was associated with only earning money were less motivated to pursue college than those whose purpose was to contribute to the wellbeing of society. This

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implies the need for counselors who can inspire students to connect their personal career goals with broader, ultimate, purposes that can enable them to contribute to society. Given the results of such studies (e.g., Hill et al., 2010; Leppel, 2005), one would also anticipate that different purpose orientations would differentially impact high school students' decision to pursue college. Perhaps specific purpose orientations or a combination of them may encourage students' persistence in the college going process and promote their application to college. However, no research exists on how high school students' purpose orientations influence their college-related decisions prior to their entry to college.

In the present study, we explored the different types of purpose orientations amongst a nationally representative sample of adolescents and the effect of these purpose orientations on high school graduates' college application decisions using the Educational Longitudinal Study 2002 (ELS: 2002). Following sections provide the review of literature on the concept of "purpose orientations" and the relationship between purpose orientations and college outcomes.

Defining and Assessing Purpose Orientations

A few scholars (e.g. Bronk & Finch, 2010; Hill, Burrow, & Thornton, 2010; Moran, 2013) have recently begun to explore the nature and content of adolescents' life purpose. They have employed multiple methods to identify

different types of purpose and have contributed to the literature on "what" the nature of adolescents' life purpose is, instead of just providing evidence about whether or not adolescents feel a sense of purpose. For instance, Moran (2013) referred to different types of purpose as cultures of purpose and identified four cultures of purpose among adolescents: Supported, Strivers, Givers, and Disciples. The Supported focused on reasons and meaning for what they could gain from others. Strivers aimed for primarily standard career success goals. Givers felt certain about their aims to help others. Disciples felt certain about their faith-focused purpose to serve God. Similarly, Hill, Burrow, and Thornton (2010) explored adolescents' definitions of purpose and coded them based on five categories: foundation and direction, happiness, prosocial content, financial or occupational goals, and religious content. On the basis of cluster analysis of data collected from 144 adolescents' surveys, Bronk and Finch (2010) reported four groups: youth without clear long-term aims, youth with self-oriented long-term aims, youth with other-oriented long-term aims, and youth with both self and other-oriented long-term aims. In a similar vein, Hill et al. (2010) proposed that an individual's "purpose in life is often indicated by multiple and related goals, rather than a single one" (p. 174). For instance, if someone's life's purpose is materialistic in nature, then that person might value pursuit of several materialistic life goals such as earning money, gaining financial

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stability, getting a high-paying job, and so on. According to Hill et al. (2010), purpose orientations refer to the constellation of related and long-term life goals. To develop the purpose orientations measure, Hill et al. (2010) performed a Principal Components Exploratory Factor Analysis on the life-goal items formulated by the Higher Education Research Institute (HERI) at University of California-Los Angeles after collecting data from 1,748 undergraduate seniors. The results of their study suggested four types of purpose orientations: pro-social orientation, financial orientation, creative orientation, and personal recognition orientation. Hill et al. (2010) defined pro-social orientation as “one’s propensity to help others and influence the societal structure”; financial orientation as “goals of financial wellbeing and administrative success”; creative orientation as “artistic goals and a propensity for originality”; and personal recognition orientation as “one’s desire for recognition and respect from colleagues” (p. 174). High positive correlation over two measurement occasions (13 years apart) revealed that these purpose orientations remain stable over time. The results of Hill et al. (2010) study also suggested that only prosocial purpose orientation predicted personal growth, purpose, and integrity among middle adults after controlling for other orientations. The implications of the study emphasized the importance of assessing the range of purpose orientations across the lifespan, and how these orientations differentially predict

peoples’ developmental and educational outcomes.

Purpose Orientations and College Outcomes

Apart from a general sense that he or she has a purpose to fulfill, different types of purpose impact adolescents’ developmental and educational outcomes differently. For example, Bronk and Finch (2010) reported that those young people who expressed both self- and other-oriented purpose demonstrated more positive developmental outcomes and life satisfaction than others. In the context of postsecondary outcomes, Leppel (2005) found that students who choose their career solely on the basis of a financial purpose, that is, for material gain rather than other purposes, such as desire to contribute to society, were less likely to pursue a college education.

Research also demonstrates that the number one life goal that students report for pursuing college is to fulfill their career aspirations (Astin, Korn, & Riggs, 1993). Adolescents, who value career-oriented goals such as job security, work that is interesting, and using one’s skills and abilities to produce results report stronger college aspirations (Wray-Lake et al., 2011). On the other hand, career indecision or lack of clarity regarding one’s career path, contributes to students’ decision to leave college (Shearer, 2009). Further on, the higher the students’ sense of purpose in life, the lower is their career indecision (Olivera-Celdran, 2011). Therefore, scholars

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such as Kosine, Steger, and Duncan (2008) have emphasized the importance of implementing purpose-centered career interventions in school settings.

In the context of purpose and career development, Savickas (2008) acknowledged Tiedeman (1985) as the first career theorist to see purpose as a key mechanism in self-organization and who considered purpose to be the engine of career development. Tiedeman and Miller-Tiedeman (1985) emphasized that purpose bridges the discontinuities in people's career unfolding and the goal of career development lies in perceiving and constructing one's own life and vision. Kosine, Steger, and Duncan (2008) suggested that having a sense of purpose supports adolescents and young adults in choosing sustaining careers with deeper levels of commitment and persistence. Through focusing on purpose, school counselors can support students to define work that is personally meaningful to them and enables them to contribute to their community (Kosine, Steger, & Duncan, 2008). Besides a general sense of purpose, specific types of life's purpose might impact high school students' college outcomes. Based on previous studies, we can hypothesize that some purpose orientations such as pro-social orientation appear to contribute more to students' psychological wellbeing (Hill et al. 2010), whereas other types of purpose, such as career-oriented purpose, seem to be more conducive to strengthening their college

aspirations (Wray-Lake et al., 2011). However, although a few scholars explored the relationship between sense of purpose and college persistence, a gap remains regarding understanding how purpose is related to high school students' decision to pursue college. Given the previous research on the effect of different types of purpose on student persistence and retention in college (e.g. Leppel, 2005), one would anticipate that different purpose orientations would also influence whether youth pursue in applying and enrolling in college. The goal of this study is to investigate the nature of purpose orientations and their effect on high school students' college application decisions.

Purpose of the Study

Guided by Hill et al.'s (2010) conceptualization of "purpose orientations," the purpose of this study was to investigate the nature of high school students' life purpose and further examine the relationship between their purpose and college application decisions. Two research questions guided this study.

First, what types of purpose orientations do high school students report? To examine this research question, we performed a Principal Components Exploratory Factor Analysis on 14 items about high school students' long-term life aspirations in the Educational Longitudinal Study 2002 (ELS: 2002).

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Second, what is the relationship between each of these purpose orientations and high school graduates' college application decisions after controlling for demographic variables (i.e., race/ethnicity, social class, school type, and urbanicity) and academic achievement? It is hypothesized that high school students' purpose orientations will be significantly related to college application decisions. The results of this study with regard to the nature of adolescents' life's purpose and its effects on college application could help school counselors to promote high school students' college-related decisions that align with their purpose in life, which research shows helps them to persist in post-secondary education (Allen & Nora, 1995). In our awareness, apart from this study, there have been no other studies on the construct of purpose among adolescents using national longitudinal surveys.

Method

Participants

We used data from the ELS: 2002, a public-use data set collected by the U.S. Department of Education's National Center for Education Statistics (NCES). The ELS: 2002 follows a national sample of 10th graders biennially from 2002 to 2004 and then a second follow-up in 2006. The 2006 follow-up included students who were in college or in the workforce and collected data specific to postsecondary enrollment, access and choices. These students attended U.S. public, private

and Catholic schools. Of the 12,027 analytic sample of high school students, 63.0% were White, 14.2% were Latina or Hispanic, 13.3% were Black/African American, 0.9% were American Indian/Alaska Native, 3.9% were Asian/Hawaiian/Pacific Islander, and 4.7% identified as multiracial. We combined Hispanic, no race specified and Hispanic, race specified as one category as Latina or Hispanic as the NCES categorized race/ethnicity in the ELS: 2002 data report (Bozick, Lauff, & Wirt, 2007).

Approximately 50% were male students and 51.1% were female students. Of the sample, 4.6% students attended Catholic schools, 3.3% students attended private schools, and 92% students attended public schools; 20.1% lived in a rural area, 51% lived in suburban and 29% lived in an urban area.

Measures

Dependent variable. A college application question assessed whether high school students applied for college within the first two years after graduation with a dichotomous variable (Yes, No). Of the sample, 78.9% of the students reported that they had applied to college, while 21.1% of the students reported that they had never applied to college.

Demographic variables. Race/ethnicity was a categorical variable of six categories: White, Latina or Hispanic, Black or African

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American, American Indian/Alaska Native, Asian or Hawaiian/Pacific Islander, and multiracial. Race was dummy coded, with White serving as the reference group. Social class was measured by a composite variable that made up parents' occupation, educational level and income in the ELS dataset, which is a continuous variable and standardized for use in the regression. School type (i.e., public, private) and urbanicity (i.e., urban, rural) were both dummy coded with rural and Catholic as reference groups. Academic achievement was all GPA from 10th grade through 12th grade as a categorized variable, which was treated as continuous variable and standardized for the regression.

Purpose Orientations variables.

We conducted principal component analysis (PCA) with varimax rotation of the 14 items from the ELS: 2002 database to derive purpose orientations based on Hill et al.'s (2010) conceptual framework. Using the scree plot, eigenvalue greater than one, and conceptual meaningfulness of the factors as criteria to retain factors, we examined 3, 4, and 5 factor solutions. The 4 factor model seemed most conceptually meaningful and aligned with the purpose orientations framework. The four factors or variables measuring purpose orientations are described on the next page (Table 1).

Career purpose orientation.

We define career purpose orientation as adolescents' desire to realize their career aspirations such as gaining expertise and training to excel in their chosen profession. Career purpose orientation was measured by a composite of four items (Cronbach's $\alpha = .68$) regarding "importance of being successful in line work" (factor loading = .77), "importance of being able to find steady work" (loading = .63), "importance of being expert in field of work" (loading = .66), and "importance of getting good education" (loading = .67). All items were measured on a three-point scale and standardized it for entry to the regression that a higher score represented a higher career purpose orientation (1=not important, 2=somewhat important, 3=very important).

Interpersonal purpose orientation.

We define interpersonal purpose orientation as adolescents' desire to cultivate happy relationships with their family and friends, and also provide better opportunities to their children. Interpersonal purpose orientation was measured by a composite of five items (Cronbach's $\alpha = .64$) coded 1=not important, 2=somewhat important, 3=very important): "importance of marrying right person/having happy family" (loading = .77), "importance of having strong friendships" (loading = .54), "importance of giving children better opportunities" (loading = .48), "importance of living close to parents/relatives" (loading = .30), and "importance of having

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Table 1.
Means, Standard Deviations, and Factor Loadings of Purpose Orientations Variables (N =12,027)

	<i>Factor Loading</i>	<i>M</i>	<i>SD</i>
Career Purpose Orientation			
Importance of being successful in line work	.77	2.85	.38
Importance of being able to find steady work	.63	2.83	.41
Importance of being expert in field of work	.66	2.67	.54
Importance of getting good education	.67	2.82	.41
Interpersonal Purpose Orientation			
Importance of marrying right person/having happy family	.77	2.72	.54
Importance of having strong friendships	.54	2.82	.42
Importance of giving children better opportunities	.48	2.77	.49
Importance of living close to parents/relatives	.30	2.14	.66
Importance of having children	.76	2.34	.71
Altruistic Purpose Orientation			
Importance of helping others in community	.71	2.30	.59
Importance of working to correct inequalities	.79	1.92	.677
Self-oriented Purpose Orientation			
Importance of having lots of money	.58	2.33	.62
Importance of getting away from this area	.77	1.75	.77
Importance of having leisure time	.43	2.66	.52

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children" (loading =.76). We combined and standardized it for entry to the regression. The item of "importance of living close to parents/relatives" loaded on two factors, but conceptually it seems to fit the interpersonal purpose orientation.

Altruistic purpose orientation.

We define altruistic purpose orientation as adolescents' desire to support people in their community and make a positive difference in society at large. Altruistic purpose orientation was measured by a composite of two items (Cronbach's $\alpha = .54$; "importance of helping others in community" (loading =.71) and "importance of working to correct inequalities" (loading =.79). It was measured on a three-point scale (1=not important, 2=somewhat important, 3=very important) and standardized it for entry to the regression.

Self-oriented purpose orientation.

We define self-oriented purpose orientation (Bronk & Finch, 2010) as adolescents' desire to fulfill their personal aspirations such as achieving financial success and living a life of comfort and leisure. Self-oriented purpose orientation was measured by a composite of three items (Cronbach's $\alpha = .29$; "importance of having lots of money" (loading = .58), "importance of getting away from this area" (loading = .77), and "importance of having leisure time" (loading = .43). Three items were measured on a four-point scale (1=strongly agree, 4= strongly disagree) and

standardized it before entry in the regression.

Data Analysis

We conducted hierarchical logistic regression analysis to investigate the relationships of the predictors (e.g., demographic variables, purpose orientations variables) to each category (e.g., Yes, No) of the dependent variable (e.g., whether high school graduates had ever applied for college). Given the ELS: 2002 is a complex sample using oversampling and multistage collection procedures, we used SPSS for Complex Samples to correct sampling weights and apply the sample design effects (Bryan, Day-Vines, Holcomb-McCoy, & Moore-Thomas, 2010).

Results

We entered the variables in two steps with the demographic variables as well as academic achievement in Model 1 adding the purpose orientations of 10th grade variables in Model 2 (see Table 2 on page 108). The logistic regression model was significant at the first block comprising only demographic variables and academic achievement, Wald $\chi^2(12) = 1187.11$, adjusted Wald $\chi^2(10) = 1089.98$, $p < .001$, Nagelkerke $R^2 = .203$, and at the second block when the purpose orientations of 10th grade students were entered, Wald $\chi^2(16) = 1092.64$, adjusted Wald $\chi^2(14) = 985.77$, $p < .001$, Nagelkerke $R^2 = .213$, change in Nagelkerke $R^2 = .010$. The demographic variables and academic achievement explained 21.3% of the variability and the purpose orientations variables explained an

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additional 1.0 % of the variability in college application after controlling for the demographic variables and academic achievement.

Effects of Demographic Variables and Academic Achievement on College Application

Race/ethnicity, gender, SES, types of schools, and academic achievement were significantly related to college application in all models. Compared to White, African American/Black, Asian/Native Hawaiian/Pacific Islander and Latina, race/ethnicity were significantly related to their college application decisions at both models. Asian/Native Hawaiian/Pacific Islander, African American/Black and Hispanic or Latina students were more likely to apply to college than White students (vs. No; OR = 2.95; OR = 1.68; 1.28). Once purpose orientation variables were entered in model 2, the effects of those race/ethnicity were increased. Given the differences in the odds ratios between models 1 and 2, the purpose orientations may appear to decrease race/ethnicity and college application decisions gaps for minority high school students. SES was consistent in both models in that it was significantly related with college application. Specifically, SES has almost four times greater odds of deciding applying for college (vs. No; OR =4.21). The effects of the SES variable on college application were slightly increased once purpose orientation variables taken into consideration in model 2. Regarding academic achievement, students'

GPA from 10th grade to 12th grade was positively related to college application decisions (vs. No; OR =1.6). Regarding types of schools, students in public schools were less likely to apply for college than students in private schools in the both models (vs. No; OR =.41) comparing to students from private schools. Interestingly, students from Catholic schools were positively related to college enrollment in model 1 (vs. No; OR =1.52), then it was no longer significant in model 2 after purpose orientations was taken into consideration.

Effects of Purpose Orientation on College Application

Regarding purpose orientations, only career purpose orientation was positively related to whether high school graduates had ever applied for college in the full model (OR =1.24). Interpersonal, altruistic and self-oriented purpose orientations were not related to college application decisions. Students who reported higher career purpose orientation, that is, who valued goals such as achieving steady work, becoming an expert in their field of work, being successful in their line of work, and receiving a good education are more likely to apply for postsecondary education. In other words, students' strong desire or aspiration for excelling in their profession and achieving educational success appeared to be linked to their action of applying for college.

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Table 2.
Logistic Regression Analysis Predicting Purpose Orientations ($n=12,035$)

Model	Step 1			Step 2		
	Yes Versus No			Yes Versus No		
	<i>B</i>	<i>SE</i>	<i>Odds Ratio</i>	<i>B</i>	<i>SE</i>	<i>Odds Ratio</i>
Intercept	2.17	.16	8.76***	2.30	.18	9.98***
Demographic Variables						
Gender^a						
Male	-.53	.57	.58***	-.52	.06	.59***
Student Race/Ethnicity^a						
American Indian/Alaska Native	-.22	.24	.82	.04	.28	1.04
Asian/Hawaiian/Pacific Islander	.98	.13	2.67***	1.08	.14	2.95***
African American or Black	.44	.08	1.56***	.522	.09	1.68***
Hispanic or Latina	.17	.08	1.19*	.25	.09	1.28**
Multi-racial	.05	.13	1.05	.07	.14	1.08
White						
Urbanicity^a						
Urban	.002	.08	1.00	-.10	.09	.89
Suburban	-.05	.07	.94	-.11	.07	.89
Rural						
School Control^a						
Public	-.80	.15	.44***	-.87	.17	.41***
Catholic	.42	.19	1.52*	.34	.20	1.40
Private						
SES ^b	1.39	.06	4.04***	1.43	.07	4.21***
Academic Achievement ^b	.53	.02	1.70***	.53	.02	1.6***
Purpose Orientation Variables						
Career Purpose Orientation ^b				.21	.03	1.24***
Interpersonal Purpose Orientation ^b				.02	.03	1.02
Altruistic Purpose Orientation ^b				-.05	.03	.95
Self-oriented Purpose Orientation ^b				-.01	.03	.98

Note. Wald χ^2 (12) = 1187.11, adjusted Wald χ^2 (10) = 1089.98, $p < .001$, Nagelkerke $R^2 = .203$ for step 1, Wald χ^2 (16) = 1092.64, adjusted Wald χ^2 (14) = 985.77, $p < .001$, Nagelkerke $R^2 = .213$.

^a Reference categories for each variable in order: Female for gender, White for race/ethnicity, private for school type, rural for urbanicity, and

^b Standardized as z-score.

* $p < .05$; ** $p < .01$; *** $p < .001$.

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Discussion

The aim of the present study was to examine the relationship between high school students' purpose orientations and their college application decision after controlling for demographic variables and academic achievement. Here, purpose orientations are defined as the constellation of related and long-term life goals (Hill et al., 2010). We assessed purpose orientations through performing a Principal Components Exploratory Factor Analysis on 14 items that focus on students' long-term life aspirations in the Educational Longitudinal Study 2002 (ELS: 2002).

Consistent with previous findings on the college application rates (e.g., Bryan, Moore-Thomas, Day-Vines, & Holcomb-McCoy, 2011), our findings indicate that students' gender, race/ethnicity, SES, and academic achievement significantly predicted applying to college. Interestingly, relative to White students, minority students such as African American or Black, Asian/Pacific Islander, and Latino students were more likely to apply to college. Supported by previous research (e.g., Kim, Mayes, Hines & Bryan, in press), this finding indicates that race and ethnicity-based gaps appear to be closing in terms of college application rates. However, we need to acknowledge that the gaps persist in the types of colleges minorities apply to, with White and Asian students applying in larger percentages to more selective colleges. Further, when purpose orientation was

considered, the effect of race and ethnicity (e.g., Asian American/Native Hawaiian/Pacific Islander, African American/Black and Hispanic or Latina) on college application rates increased. This finding may suggest that purpose orientation may be a motivator that increases the odds of minority high school students applying to college. As corroborated by previous studies (Bryan et al, 2011; Engberg & Wolnlack, 2010; Perna & Titus, 2005), SES appears to be the strongest predictor of college application. The higher SES students have, the more they are likely to apply for college. Interestingly, the effect of SES on college application increased once purpose orientations were taken into consideration. The effect of academic achievement also seems to be very pervasive in predicting college application. Students in private and Catholic schools were more likely to apply to college than those in public schools.

In relation to purpose orientations, present findings suggest four kinds of purpose orientations. First is a career purpose orientation that refers to adolescents' desire to realize their career aspirations such as gaining expertise and training to excel in their chosen profession. Second is interpersonal purpose orientation that refers to adolescents' desire to cultivate happy relationships with their family and friends, and also provide better opportunities to their children. Third is altruistic purpose orientation that is adolescents' desire to support people in their

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community and make a positive difference in society at large. Fourth is self-oriented purpose orientation defined as adolescents' desire to fulfill their personal and self-oriented aspirations such as achieving financial success and living life of comfort and leisure. Among these, altruistic purpose orientation is similar to Hill et al.'s (2010) pro-social purpose orientation defined as college students' propensity to help others and influence the societal structure. Other purpose orientations are different in both studies perhaps due to the difference in survey items. The present study further suggests that in contrast to altruistic, interpersonal, and self-oriented purpose orientations, only career purpose orientation is significantly associated with high school students' decision to apply for college. This indicates that high school students' clarity regarding their career goals and a strong desire to excel in their chosen profession appears to play the most crucial role in their decision to apply for college. The significant role of career purpose orientation in influencing high school graduates decision to apply for college also reinforces different scholars' (e.g. Kosine, Steger, & Duncan, 2008) suggestion on providing purpose-centered career counseling within school settings. Super (1980) proposed that during late adolescence, students engage themselves in the process of self-exploration and goal-establishment. While making career goals, adolescents seek personal consistency based on their values, ideas concerning the future of society, and what they dream of becoming

(Guichard, 2003).

During adolescence, occupational choices that reflect one's subjective sense of purpose become more specific, clear, and certain (Jepsen & Dickson, 2003). However, most of the career guidance programs only focus on providing students' with job information, conducting interest and personality assessments, and engaging in realistic decision-making strategies instead of recognizing broader concepts of purpose that adolescents can hold onto while making career decisions and transitions (Savickas, 2008). Savickas et al. (2009) instead suggested the importance of supporting students and clients to engage in diverse activities and roles that can help them to identify those activities that resonate with their core self and purposes. According to Tiedeman & Miller-Tiedeman (1985), life purpose enables people to bridge the discontinuities in their career unfolding in a more adaptive way. In line with this speculation, empirical studies have demonstrated that a sense of purpose strengthens students' characteristics such as grit and spirit to persevere, which are important in fulfilling their long-term goals such as college education (Hill, Burrow, & Bronk, 2016). As well as students are more likely to persist toward college completion when they are aware of their purpose in life (Allen & Nora, 1995). Hence, it is important to strengthen career choice readiness (Super, 1980) among school students through not only supporting them to explore different

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career opportunities and gain insight into their own interests and abilities, but also gain clarity about their ultimate purpose in life and the kind of career that could enable them to fulfill this purpose.

In spite of the evidence related to the significant role of career counseling in school settings, current federal and state mandates such as standardized testing has reduced the time and availability of school counselors to provide comprehensive career counseling to students (Schenck, Anctil, Smith, & Dahir, 2012). Further, many stakeholders do not yet recognize the value of implementing career interventions in schools (Hutchison, Niles, & Trusty, 2016). A misunderstanding exists among school personnel that career-related interventions pressure students to pursue work instead of college education immediately after school counseling (Hutchison, Niles, & Trusty, 2016). However, the present study suggests that career-oriented long-term life goals are in fact closely linked with students' decisions to apply for college. Therefore, it is critical for school counselors to inspire and help students develop a career-oriented purpose through helping them awaken to their career aspirations, gain clarity about their short-term and long-term career goals, and perceive the value of college in fulfilling these goals.

Limitations and Future Directions

The present study suggests that high schools students may be more likely to apply to college when they value career-related life-goals such as being successful in their career. Though the results of this study contribute significantly to the literature on different types of adolescents' life purpose and their effects on college application, it has several limitations. First, our analyses were limited to the variables identified in ELS: 2002 database. Since we used a national secondary data source, we could not alter the list of the variables. Even if the list seems extensive, it does not represent all types of long-term life aspirations that adolescents have. Also, low reliabilities of two factors (self-oriented and altruistic purpose orientations) due to the less number of items might not have fully captured the nature and role of these two purpose orientations. Further, the present study is correlational in nature and thus, causal interpretations cannot be made. In future studies, researchers should explore the purpose orientation variables that emerged in this study using more comprehensive datasets that provide a wider range of purpose related variables. Perhaps, researchers can create their own survey based on the types of adolescents' purpose that emerged in this study and other previous studies (e.g. Hill et al., 2010; Reilly, 2009; Yeager & Bundick, 2009). Future investigation can also focus on the effects of these purpose orientations on other academic, career, and socio-emotional growth related outcomes

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apart from college application. Another important research direction is to explore the possibility of gender, socio-economic, and ethnic differences in relation to adolescents' purpose orientations. For instance, researchers can explore whether the effects of purpose orientations differ in college application decisions based on socio-economic backgrounds. It would be interesting to also conduct cross-sectional studies to examine purpose orientations across different demographic backgrounds and further examine the environmental variables that influence nature of adolescents' purpose.

Further on, the design of the current study did not allow for investigation of the process through which students acquire certain purpose orientations and their impact on students' development. Current research is just one of the first steps to examine the nature of school students' life purpose and its impact on their college outcomes. Much remains to be done in explicating the process or mechanism in which students make a decision to apply for colleges in the context of their purpose in life. In future, a qualitative study, structural equation modeling, or mixed-methods study

may provide further information to understand the nature and role of purpose orientations.

Additionally, apart from the content of purpose, the level of awareness, scope, and strength of that purpose could influence a person's developmental and educational outcomes (McKnight & Kashdan, 2009).

Future mixed methods research, utilizing other measures of purpose, open-ended survey questions, and interviews is needed to gain an in-depth understanding about the relationship between high school students' purpose and their college application decisions.

Implications for Practice
Given the important role that purpose plays in shaping people's short-

term and long-term goals (McKnight & Kashdan, 2009), it is important for school counselors and counselor educators to understand the nature of students' life's purpose. The present study revealed four kinds of purpose orientations among high school students: career, interpersonal, altruistic, and self-oriented purpose orientations. The results of the study also indicated that only career purpose orientation played a significant role in motivating



“The present study revealed four kinds of purpose orientations among high school students: career, interpersonal, altruistic, and self-oriented purpose orientations.”

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students to apply for college.


It is therefore critical for school counselors and educators to engage in purpose-centered career counseling to support students in formulating career goals that resonate with their purpose in life and further realize the value of college in fulfilling these goals.

Kosine, Steger, and Duncan (2008) suggested five key elements of purpose-centered counseling in school settings: (a) identity, (b) self-efficacy, (c) metacognition, (d) culture, and (e) service. According to this framework, identity can be developed through personal and career exploration. Self-efficacy refers to belief in one's abilities. Metacognition refers to self-awareness regarding one's own thinking processes, strengths, weaknesses and career decision making. The role of culture is considered significant in making career decisions that can positively impact one's community. Lastly, the component of service inspires students to advance greater good and explore the ways in which their career can assist them in contributing to society. At core, this framework focuses on supporting youth to engage in deeper self-exploration for identifying their purpose and decide a career path that has potential to benefit them as well as society at large.

School counselors can support adolescents to awaken to their life's purpose by engaging them in self-exploratory activities to help them gain clarity about their values and different aspects of their identity and

encouraging their participation in service-learning activities and pro-social initiatives that are beyond just personal success (Shamah, 2011). Indeed, school counseling programming can provide youth with structured activities that enable them to discuss their goals, values, purposeful work, interconnectedness in society, and pro-social functions of various occupations could also strengthen adolescents' sense of direction, purpose, and understanding about their interests and abilities (Dik, Steger, Gibson, & Peisner, 2011). School counselors could also support students' development of purpose by intentionally using instruments, such as the Sense of Purpose Scale (Sharma, Yukhymenko, & Kang, 2017), that measure students' level of awareness of their own purpose as well as the recent changes caused by their attempts to awaken to their purpose. Counselor educators committed to the development of school counselors must integrate the knowledge and educational experiences that could support graduate students in learning more about purpose-centered career counseling and purpose-centered interventions. We believe that teaching about purpose-centered activities might motivate graduate students enrolled in school counseling program to design interventions that could support school students in making career and college related goals that resonate with their purpose in life. According to Niles and Harris-Bowlsbey (2013) career is a way for people to express their life's purpose. The ultimate goal of an

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individual's career development lies in evolution of existential meanings and constructing one's own life and vision (Tiedeman & Miller-Tiedeman, 1985). The present study has highlighted that supporting students to develop clarity about their life's purpose, make career decisions that align with their purpose, and recognize the importance of college education in fulfilling their career-oriented purpose may strengthen their motivation to apply for college. Therefore, counselor educators, especially those teaching career counseling courses, could incorporate knowledge and professional development opportunities that specifically address relationship between sense of purpose and career aspirations among school students. 

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