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Influences on the Choice of Library Science Graduate Study: An Examination of Cultural and Social Capital, Economic Factors, Gender, and Race

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INFLUENCES ON THE CHOICE OF LIBRARY SCIENCE GRADUATE

STUDY: AN EXAMINATION OF CULTURAL AND SOCIAL CAPITAL,

ECONOMIC FACTORS, GENDER, AND RACE

Dissertation

Submitted in partial fulfillment
of the requirements for the degree of Doctor of Education
in the Carter and Moyers School of Education
at Lincoln Memorial University

by

Rhonda K. Armstrong

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Dedication

I dedicate this dissertation to my beloved mother, the late Sharon Armstrong, and to my dad, Seth Armstrong. Their lives represent social justice action through my mother's concerns about social issues and efforts to combat racism, and my dad's long career as an educator, who contributed to the success of many students through teaching them a solid foundation of mathematics, and who taught them to think critically beyond mathematics. I also dedicate it to my husband, Gene House, also an educator, without whom I do not know how I would have persevered. He listened to me talk about the dissertation, discussed sociological theories, cared for our dogs and birds when I really needed to write, and patiently encouraged me throughout the whole process of obtaining this degree.

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I would like to acknowledge my dissertation chair, Dr. Jody Goins, who never doubted and always encouraged me throughout the doctoral program and the writing of this dissertation. You have been my champion. I acknowledge Dr. Vinayak Nahar, who taught me quantitative research and served on the dissertation committee. I am grateful for your gifted instruction. To Dr. Bharat Mehra, I am very appreciative of your social justice and critical theory insights. This dissertation and I benefited greatly from our conversations and your suggestions. Thanks also go to Dr. Evelyn Smith who initially suggested I pursue this degree and who has always been a wonderful colleague.

Abstract

The demographics of the library and information profession in the United States, which is primarily White and female, do not reflect the diversity of the population and those libraries serve. To further the understanding of who chooses library science graduate programs and how one might take social justice actions for more diversity, this study employed a post-positivist, quantitative study blended with critical theory. The study used Perna's college choice model, which considers cultural capital, social capital, and economic factors as influential on college choice decisions. The study utilized a secondary data set, the Baccalaureate and Beyond Longitudinal Study 2008/2012 data set from the National Center for Education Statistics, to find the characteristics of library science graduate students from the overall sample of 17,160 students from 1,730 participating higher education institutions. The use of logistic regression determined odds ratios for the influence of various cultural, social, academic, and economic factors on the decision to enroll and found cultural and social capital, and economic factors influence decision making. Findings included, in addition to the underrepresentation of non-Whites and males, less odds on enrollment by first-generation students, those with dependents, and those attending non-doctoral institutions as undergraduates. A critical theory lens provided guidance for creating a framework for diversity in libraries action plan to use as a tool for planning social justice actions to increase and retain representation among the groups identified in the study.

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Chapter I: Introduction

Despite major library associations calling for diversity efforts such as by the American Library Association and despite efforts on the part of some library educators to recruit diverse pools of students (Al-Qallaf & Mika, 2013; American Library Association, 2004; Chu, 2013), the field remains extremely White and female. Although there are many documented efforts of service to historically and currently disenfranchised groups, that service is still not universal (Mehra, Rioux, & Albright, 2017). Providing information services for everyone, and recruiting and retaining a diverse library workforce are social justice ideals. It is only primarily in the 21st century have librarians used the term *social justice* to frame the discussion and to provide direction for a focused social justice approach to library services, collections, staffing, and research (Allard, Mehra, & Quayyum, 2007; Mehra, Albright, and Rioux, 2006; Mehra, 2015; Mehra et al., 2017; Rioux, 2010).

Social justice as an educational construct

John Dewey, a progressive education philosopher from the early 20th century, was an early proponent of education having a role in advancing society (Hamilton, 2017; Hickman, 1996). In developing a concept of social justice as an educational construct or "a deliberate purpose for educational leadership" (Bogotch, 2014, p. 53), Bogotch (2008) drew upon many of Dewey's educational concepts. Specifically, those included the concepts of experience, morality, temporality, and laboratory learning (p.70). Bogotch argued one should not separate schooling and society and cited Dewey as agreeing on that point (p. 93). Bogotch conceded that often educators are so busy with prescribed activities, such as testing, there is little time for venturing out into the community literally or figuratively (p. 93). Considering education as a basic right (Bogotch, 2008, p. 81),

acknowledging the interrelatedness of education and society, and believing one should

not "ignore the sociocultural influences on education" (Bogotch, 2014, p.55), Bogotch

concluded that educators and educational researchers should participate in social justice

actions (p. 58, p. 62).

Shields (2010) and Theoharis (2007) both built on the idea of social justice as

being a purpose of education through offering similar leadership theories. Shields' (2010)

described the transformative leadership theory as:

> Transformative leadership, therefore, recognizes the need to begin with critical
>
> reflection and analysis and to move through enlightened understanding to action--
>
> -action to redress wrongs and to ensure that all members of the organization are
>
> provided with as level a playing field as possible—not only with respect to access
>
> but also with regard to academic, social, and civic outcomes (p. 572).

Theoharis (2007) stated:

> For this article, I define social justice leadership to mean that these principals
>
> make issues of race, class, gender, disability, sexual orientation, and other
>
> historically and currently marginalized conditions in the United States central to
>
> their advocacy, leadership practice, and vision (p. 223).

Both Shields (2010) and Theoharis (2007) demonstrated in their research how

some principals demonstrated characteristics and actions which go beyond *good* or

successful leadership into the realm of making positive changes in areas of social justice.

They were specifically concerned with ensuring every student has a better chance at

educational success.

Acknowledging many definitions of *social justice* (Theoharis, 2017) from many

fields of study (Mehra, 2015), I base my view of social justice especially upon the

writings of Bogotch (2008, 2014), Mehra (2015), Mehra et al. (2017), Rioux (2010), Shields (2010), and Theoharis (2017). In the same vein as these educators, I view social justice as an educational construct (Bogotch, 2008; 2014) and suggest putting it into practice through use of the theories of Shields' *transformative leadership* and of Theoharis' *social justice leadership*. I suggest taking actions within libraries and librarianship as advocated by Honma (2005), Mehra (2015), Mehra et al. (2017), Rioux (2010), and others in the library science field.

Honma (2005) called for the field of library and information sciences to be transformative through being willing to discuss and to work toward reducing racism and marginalization thereby transforming the profession and beyond. Transformative actions include developing a diverse and inclusive workforce, providing inclusive services, meeting information needs for diverse library users, and working for positive change in individuals, communities, educational institutions, and society to benefit library users and library employees (Brook, Ellenwood, & Lazzaro, 2016; Mehra, 2015; Mehra et al., 2017; Rioux, 2010).

Awareness of social justice issues in libraries. Library associations recognize the need to serve a diverse population (Al-Qallaf & Mika, 2013; American Library Association, 2004; Chu, 2013). The American Library Association's (ALA) values for the profession, for example, include seeking to provide information resources and services to the communities served and assist all users in achieving equitable access to information (ALA, 2004). This is increasingly important as the population of the United States becomes more diverse. The 2017 estimates by race and ethnicity from the U. S. Census are White (not Hispanic or Latino) 60.7%, Black or African American 13.4%, Asian 5.9%, American Indian and Alaska Native 1.3%, Hispanic or Latino 18.1%

("QuickFacts," 2017). Government projections for 2030 show a decline in percentage of White (not Hispanic or Latino) and an increase in the percentage of all other populations with the exception of American Indian and Alaska Native (U.S. Census Bureau, 2017). This report also showed the largest increases in percentage of the population will be in the Asian and Hispanic groups. Given these predictions and the profession's core values, librarians should be prepared to meet the information needs of all people regardless of racial or ethnic background.

Despite the awareness and concern of library educators in American library graduate programs of the need to recruit and prepare students to work in diverse settings, Al-Qallaf and Mika (2013) found only 12 of 58 graduate schools actually had diversity and multicultural goals. Of seven categories of goals, the fewest schools in their study had goals and objectives in the areas of "achieve diversity in the student body" and "recruit faculty from diverse backgrounds" (p. 14).

The library profession workforce in the United States has been mostly White and mostly female, with currently 83.6% White and 79.5% female (U.S. Department of Labor, 2017). There are problems in female dominant fields such as gender gap income inequality (Bobbitt-Zeher, 2007), and male overrepresentation in administration (Moran, Leonard, & Zellers, 2009; Passet, 1993).

Although there are undoubtedly other areas of diversity one could study for recruitment improvement, I chose to focus on diversity in race/ethnicity and gender of those who entered library graduate programs due to the documented imbalances in those areas and the availability of national data. Race/ethnicity and gender data are available for graduates of baccalaureate programs in a U.S. Department of Education dataset, Baccalaureate and Beyond Longitudinal Study (Cataldi, Siegel, Shepherd, & Cooney,

2014). The Department of Education developed this dataset through a sample of 17,110 students of an approximate 1.6 million students who completed bachelor's degree requirements during the 2007-2008 year. Follow-up occurred after one year in 2009 and after the students had been out of college for four years in 2012. The data included employment experiences and enrollment in postgraduate degree programs.

My study focused on the characteristics of those who chose to enter the field of librarianship during the first four years after completing a bachelor's degree. Knowing more regarding the characteristics of those who choose to enter the field of librarianship, particularly candidates of diversity, can help library graduate schools in their recruiting efforts. Having a more diverse student body will provide a more diverse pool of applicants for the workforce. Al-Qallaf and Mika (2013), Dali and Caidi (2016), and Jaeger, Bertot, and Subramaniam (2013) who have written on aspects of diversity in library and information science education called for more research into recruiting and educating librarians to serve in a diverse world.

Statement of the Problem

The librarian profession in the United States from the turn of the twentieth century forward has been primarily comprised of women, ranging from about 75% in 1900 to 91% in 1930 to 82% in 2007 (Moran et al., 2009, pp. 215-216). For the United States workforce, the distribution by gender shows women are 46.9%, but within the library field women now comprise 79.5% (U.S. Department of Labor, 2017, p. 1, 3). By race and ethnicity for the workforce as a whole, 78.4% are White, 12.1% Black or African American, 6.2% Asian, and 16.9% Hispanic or Latino (U.S. Department of Labor, 2017, p. 1). Contrastingly, the distribution in the library field is 86.3% White, 6.4% Black or African American, 5.2% Asian, and 10.4% Hispanic or Latino (U.S.

Department of Labor, 2017, p. 3), with Whites overrepresented in comparison to the overall workforce percentage and all other races/ethnicities underrepresented. Some authors have examined this history, the reasons for individuals selecting the profession of librarianship, and the graduate schools' recruitment of persons into the profession (Lynch, 2008; Moran et al., 2009; Oliver & Prosser, 2017; Passet, 1993). Others have written on minority populations' barriers to entering the profession and possible solutions to those barriers (Carter, 2015; Kim & Sin, 2008). Carter, for example, identified four barriers most likely to present challenges to minority populations' access to graduate education: financial, educational, psychosocial, and cultural.

Recruitment for diversity. Kim and Sin (2008) stressed the importance of research to inform effective recruitment practices. Research includes studies focused on 1) factors contributing to persons choosing librarianship, 2) barriers to minority recruitment, and 3) recruitment strategies (p. 157). It is important to understand the problem of lack of diversity in the field of librarianship and the contributing factors leading to the choice of librarianship in order to improve recruitment of a more diverse population of librarians.

Purpose of the Study

My post-positivist, quantitative study blended with a critical theory viewpoint examined the economic, social, cultural, and field of study backgrounds of bachelor's degree recipients in the Baccalaureate and Beyond dataset who enrolled in a Master's of Library Science program within four years of graduation. The study identified the variables with an impact on the likelihood of entering library graduate study and examined associations between cultural and social capital, economic factors, gender, and race/ethnicity. The purpose of the study is to learn more about the characteristics of this

population of students to inform, as a social justice critical theory action, a recruitment action plan for library graduate programs and for libraries.

Research Questions

The purposes of a research question in a quantitative study are to provide a stated inquiry about the relationship among variables the researcher is investigating or to make other inquiries about the variables to guide the focus of the study (Creswell, 2014, p. 143).

Research question 1. What are the economic, social, and cultural demographics of the 2007-2008 bachelor's degree recipients in the Baccalaureate and Beyond dataset who enrolled in a Master's of Library Science program by 2012?

Research question 2. Through applying the economic and sociological framework model of Perna (2006) to analysis of the Baccalaureate and Beyond dataset, what impact do the variables have on the likelihood of enrolling in a Master's of Library Science program?

Research question 3. For those who enrolled in a Master's of Library Science program, what are the associations between cultural and social capital, economic factors, gender, and race/ethnicity?

Theoretical Framework

Perna (2006) proposed a model for studying college choice, which situates the student's choice of college within a four-layered set of contexts (pp. 116-120). The first layer includes the student's individual context of demographics (gender, race/ethnicity), cultural capital, social capital, financial resources, and demand for higher education (pp. 116-117). The second layer is the school and community context, which is the broader setting within which the student attended school and the support or lack of support from

teachers and counselors (pp. 117-118). The third layer is higher education's influence on the student's choice through marketing, recruiting, admission requirements, and limits on enrollment (p. 118). The fourth layer of influence on decision-making is comprised of the larger societal issues, economic conditions, and policy frameworks (pp. 119-120).

My study used Perna's (2006) model as a basis for examining the choice of pursuing a master's degree in library science or closely related fields to understand choices by gender, racial/ethnicity, and major. The variables within the Baccalaureate and Beyond dataset that are closely related to cultural and social capital, and economic factors of the first layer of Perna's model were examined. The study did not examine factors from the other three layers of Perna's four-layer model because investigating those layers goes beyond the scope of this project. Like Douglas' (2017) study of those who chose to enter business graduate programs, this study examined the relationship of undergraduate major fields to the decision to choose library science graduate programs.

Significance of the Project

Few studies have focused on the factors influencing graduate college choice (Douglas, 2017; Kallio, 1995; McCulloch, Guerin, Jayatilaka, Calder, & Ranasinghe, 2017). Some have focused on the choice of library science or related graduate study (Dali & Caidi, 2016; McCulloch et al., 2017) and other graduate programs (Lara & Nava, 2018; Sasson, 2017), but very few have focused on graduate choice by gender or race/ethnicity within library science (Dali & Caidi, 2016; Davis-Kendrick (2009); Passet, 1993).

Generally, the studies on graduate study choice have been of motivating factors of an individual group such as Davis-Kendrick's (2009) study of African American male librarians and Taylor, Perry, Barton, and Spencer's (2010) study of students at one library

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and information science school. Studies of graduate study choice using a national sample, a Baccalaureate and Beyond, include Collins (2012), Douglas (2017), English & Umbach (2016), Kronfeld (2013), Lasiewski (2001), Mullen, Goyette, & Soares (2003), Nitopi (2010), and Xu (2014). None of these using a national sample explored the factors related to graduate study choice of library science. This study will add to the literature of student choice of library science study using a national sample.

This study will also further the literature on predicting graduate student choice of study by examining the characteristics of those entering library graduate programs through the lens of an economic and sociological framework proposed by Perna (2006). Douglas (2017) conducted a similar study using Perna's model by examining the characteristics of those entering graduate business programs. Similarly, my study further tested Perna's (2006) model.

By adding to the knowledge of the economic and sociological factors influencing students to choose library science, this study will assist recruitment efforts on the part of library graduate schools. An understanding of these contributing factors can also assist librarians in identifying potential candidates to recruit within the ranks of student library assistants and library staff.

The study is also significant as an example of research to inform library recruitment practices as a social justice action. Shields' (2010) definition of transformative leadership of moving from reflection, to gathering information, and after informed understanding, taking action is a model I use in this dissertation. First in chapter I is reflection on the background of the problem of lack of diversity in the library and information fields with a specific concern about the decision to choose or not choose library science as a graduate field of study. The literature review, methodology, and

findings in Chapters II, III, and IV are all information gathering activities related to graduate choice in general and specific to choice of library science. Finally, comparable to Shields' action step of moving "through enlightened understanding to action" (p. 572), I will create an action plan in Chapter V for making improvements in libraries in the areas of recruiting into the library field, and hiring and retaining diverse librarians.

Description of Terms

Culturally competent. Having knowledge of another's culture which can further understanding and communication (Gorski & Pothini, 2014).

Diversity. "Refers to the representation of the wide variety of backgrounds (including racial, cultural, linguistic, gender, religious, international, socioeconomic, sexual orientation, differently-abled, age among others) that people possess…" (Chu, 2013).

Equality and **Equity.** Morton and Fasching-Varner (2014) describe the differences in equality and equity:

> Using the term *equality* implies that all things are equal in quantity, degree, and value, whereas using the term *equity* implies that things are in the best interest of the other to assure that interactions are just—guided by truth, reason, fairness, and justice ("What is Equity?," para. 1).

Inclusion. O'Mara (2015) defined inclusion as follows, crediting the authors of the book, *Global Diversity and Inclusion Benchmarks: Standards for Organizations Around the World*:

> Inclusion refers to how diversity is leveraged to create a fair, equitable, healthy, and high-performing organization or community where all individuals are

respected and feel engaged and motivated, and where their contributions toward

meeting organizational and societal goals are valued (para. 4).

   Library science and ***library and information science.*** Refer to library fields of

graduate study, which also include archival studies, information studies, records

management, and related studies.

   Multiculturalism. Angel (2006) defined multiculturalism as follows in the

Encyclopedia of Educational Leadership and Administration:

   Multiculturalism is a philosophical stance that advocates for equal opportunity for

   individuals from diverse cultural backgrounds. As such, multiculturalism affirms

   the rights of individuals to the pursuit of personal meaning, equality, social

   justice, and democratic participation, regardless of cultural background or

   composite cultural makeup (para. 1).

   Social justice. Friesen's (2013) definition in the *Encyclopedia of Race and*

Racism is "*Social justice* generally refers to the pursuit of and realization of political,

legal, economic, and social *equality* among peoples (para. 1)."

Chapter II: Literature Review

This literature review includes social justice concepts, social justice in library and information sciences (LIS), and issues of diversity in LIS. This provides context for the topic of my research of choice of graduate library science study and context for recommending a social justice in libraries action plan to increase diversity in the library and information sciences (LIS) field.

This chapter provides an overview of student enrollment, recruitment, and college choice, including expansion of diversity, during the history of higher education in the United States. It includes the development of theories and models to explain and predict student choice of college and field of study, particularly when choosing graduate study. These theories often have an economic and sociological basis so the literature review includes works on status attainment, social stratification, and human, social, and cultural capital. An increased understanding of the interrelatedness of these forms of capital, status attainment, and social stratification can contribute to a deeper understanding of the factors contributing to graduate choice. I believe gaining a deeper understanding can also contribute to what López (2013) described as a "pursuit of social justice…that goes far beyond surface-level improvements and focuses on those deeper structures and functions that incapacitate and oppress marginalized populations in society on a daily basis" (p. 511).

Since this study uses Perna's (2004) combined economic and sociological model as a theoretical basis for analyzing a data set, the literature review includes Perna's work, and other college choice literature from researchers using Perna's model. A summary of Douglas's (2017) study of business graduate choice provides one example of how Perna's model has been used for graduate choice.

Additionally, the review of the literature examines research seeking to provide insight into college choices of graduate students, choices by race/ethnicity, and by gender. With this study's focus on choice of library science as graduate study, the literature review includes research into these students' characteristics and motivations, and choices by race/ethnicity and gender.

Social Justice Concepts

Although there are a variety of definitions of social justice, it is generally considered efforts to achieve equality in "political, legal, economic, and social" domains (Friesen, 2013, para. 1). Political social justice would include equal rights to vote and to participate in the governmental process (Friesen, "Domains of Social Justice", para. 1). The legal context would include equality in terms of process and representation in courts and other legal settings (para. 2). Economic social justice refers to narrowing the gaps between the rich and poor in a society achieving less inequality (para. 3). Social justice in the social domain could include a variety of factors but ultimately includes "mutual respect and dignity for both individuals and the social groups to which they belong (para. 4)."

Efforts to achieve social justice result in tensions which Mehra et al. (2017) in their overview of social justice concepts noted as tensions between the rights of an individual, the rights of other individuals, and "individual rights vs. the good of the community"(p. 4218). Mehra et al. also traced the history of debates on these tensions as moving from classical Greek philosophers to the Christian religious sphere to secular discussions (pp. 4218-4219.) This movement to secular discussions allows for social justice study, research, and actions in many contexts. Mehra et al. identified the

dimensions as "legal, political, economic, criminal, civil, philosophical, linguistic, religious, historical, and sociocultural" (p. 4219).

Social justice research theories include post-positivist and critical theory. Lincoln, Lynham, and Guba (2011) considered a post-positivism paradigm as viewing reality as probabilistically known (Table 6.1), but not completely known due to incomplete data or hidden variables (Table 6.5, p.109). Davis and Harrison (2013) advocated using a post-positivist framework for social justice research and action. Post-positivists consider one's reality as constructed, for example, with capital available based on one's access to power depending upon one's level in society's strata (p.4).

Critical theorists as described by Creswell (2014) are concerned with "empowering human beings to transcend the constraints placed on them by race, class, and gender" (p. 65). These theorists view research as valuable, which acts to influence social change for a more just society (Lincoln et al., 2011, Table 6.5, p. 108). Reflecting on the findings of research and using those reflections to implement a change in practice are further characteristics of this theoretical view (p.109).

One can trace critical theory to the Frankfurt school established by the Institute of Social Research in Frankfurt, Germany in 1923 (Barbour, J.D. & Barbour, J.D. 2006). These theorists were concerned with examining social, cultural, and political power structures, which hinder persons' potential and are oppressive (para. 5). They built upon the work of Karl Marx, who focused on labor and class stratification (para. 2). One of the Frankfort theorists, Jürgen Habermas, focused on communication and how truthful dialogue is crucial to facing modern society's challenges through collective decision making to lessen or eliminate oppression (para. 8). William Foster further applied critical theory to that of the role of educational leaders to critically examine societal issues and

use the power of discourse by the educational leader to lead to transformation in society (para. 11; Shields, 2010).

Critical theory enables one to question the ways in which society is structured, who benefits, who is marginalized, and how society might work toward positive change (Sensoy & DiAngelo, 2017, pp. 25-27). Critical theory has expanded to include research from theorists from "indigenous, postcolonial, racialized, and other marginalized perspectives" (p. 27).

Social Justice Research and Theories in Library and Information Sciences

Mehra et al. (2006) proposed a framework for social justice research in the library and information sciences professions. Their framework focused on the following social justice principles as quoted:

- Fairness and equity in social relationships;

- Empowerment;

- Economic, political, social, cultural, and environmental impacts;

- Community building and community development;

- Diversity, multiplicity, and democracy;

- Everyday information needs; and

- Community informatics (pp. 5-6).

Rioux (2010) called for a social justice metatheory in LIS with five assumptions as quoted:

1) All human beings have an inherent worth and deserve information services that help address their information needs.

2) People perceive reality and information in different ways, often within cultural or life role contexts.

3) There are many different types of information and knowledge, and these are societal resources.

4) Theory and research are pursued with the ultimate goal of bringing positive change to service constituencies.

5) The provision of information services is an inherently powerful activity. (p.13).

Through a consideration of Rioux's metatheory, one can develop a perspective for thinking about actions, research, and service (p.13). One can use Mehra et al. (2006) and Rioux's works as guidance for social justice research, for example, see Oliphant (2015) who used Rioux's metatheory along with discourse analysis. In addition, one should see Folk (2019) for using information literacy to increase students' academic cultural capital and Ilett (2019) for serving first-generation students in libraries as further examples of social justice research.

Diversity in Library and Information Sciences

Mehra et al. (2017) documented library activities provided to diverse library users including those from disenfranchised groups based on "race, ethnicity, class, gender, disability, sexual orientation, age and other variables" (p. 4222). To provide better library services to diverse groups, Kim and Sin (2008) stated diversity in the library profession leads to a greater comfort level on the part of the user and a greater understanding of the diverse users' information needs (p. 155). The profession, however, is not yet very diverse as found in the following literature.

Predominance of white females. Carter (2015) stated, "few other occupations are more middle-aged, more female and/or more white (p. 295)." Brook et al. (2015) have documented the predominance of Whiteness and its influences in libraries. The predominance of females and Whites still holds true in 2017 data as only ten professional occupations are near or exceed the number of females and also are predominately White (see Appendix A). Authors of library literature and those in other fields have examined the prevalence of gender differences, finding that serious gender inequality issues exist related to traditional female fields in the areas of wage gaps and hindrances in advancement (Bobbitt-Zeher, 2007; Moran et al., 2009; Morgan, 2008; Passet, 1993).

Passet (1993) studied 281 men who attended library school from 1887 through 1921, discovering their characteristics and providing context for the salary gaps that persist (p. 387). Some library school directors recruited men in the hopes that salaries in the profession would rise (p. 395). Moran et al. (2009) expressed concern about the persistence of lower salaries for women than men through the 1960s through 1990s. Silva and Galbraithe (2018) reported that as of 2014-2015 in Association of Research Libraries women's salaries were 95.5% of men's (p. 324).

Prevalence of disproportionate number of males in leadership. Library school directors encouraged some of the men in the late 1800s through early 1900s to aspire to administrative positions thus contributing to setting the pattern of more men in library director positions (Passet, 1993, pp. 396-397). Passet examined correspondence of library school directors, which revealed their expectations of male students. The directors encouraged male students to be very selective by accepting positions at the most prestigious institutions or positions with the best titles and salaries (p. 397). Some library

school directors describing men in terms not indicative of leadership qualities still recommended they should be directors of libraries (p. 397).

The prevalence of male librarians in leadership positions existed as well in the American Library Association's early years in the late 1800s until at least the 1970s and 1980s (Turock, 2001, p. 115). One example Turock provided is "that of fifteen Executive Directors from 1890 to 1972, fourteen men served in that position alone except for one year – 1890 to 1891– in which a man and a woman occupied it jointly" (p. 115). In the early years of public libraries, although women were active in fundraising and providing other forms of support and service, neither equal pay nor equal status in leadership existed for women due, at least in part, to lack of women's voting rights (Mehra et al., 2017, p. 4223).

Moran et al. (2009) studying the numbers of women administrators in academic libraries at Association of Research Libraries (ARL) and at Carnegie Liberal Arts I institutions reported the representation of men still exceeds women in administration except at the assistant/associate director and department head level at small non-ARL institutions (p. 226). Using the statistic of 70 percent females in academic libraries for comparison (p. 216), the number of females at the Liberal Arts I institutions at the assistant/associate director level was 73.9% and at department head level was 74.6%, which are levels of slight overrepresentation by females (Table 1, p. 223). For all the other levels of library administration, underrepresentation of females existed: women as ARL directors, 60.9%; assistant/associate directors, 58.2%, department heads, 63.6%; Liberal Arts I directors, 50.9% (Table 1, p. 223). All these levels of female representation are improvements though over levels in 1972. For example in 1972, only 2.2% of the

director positions at ARL libraries were held by women and only 33.9% at the Liberal Arts I libraries (Table 1, p. 223).

Gender income gaps. Bobbitt-Zeher (2007) found in a study of factors contributing to gender income gaps the "educational factor that seems to matter the most is college major" (p.13). Bobbitt-Zeher used data from the National Educational Longitudinal Survey of 1988. This survey included data from over 12,000 students who were followed from high school through college and into early adulthood in 2000 (p. 7). Bobbit-Zeher used regression analysis to determine explanations for the percentage gaps in men and women's salaries and found 14% of the income gap was explained by the percentage of females in the college major. Estimated generalized least-squares regression analysis showed that the percentage of females in college major explained a larger percentage of the income gap than the field of study (p. 10; Table 2). This data suggests the fields of study associated with women and populated with a larger percentage of females may be devalued and thus those employed in those fields paid less (p. 15).

Need for racial and ethnic diversity. In the 1970s, the American Library Association (ALA) recognized the need for racial and ethnic diversity and charged library schools to do better recruiting (Carter, 2015). The stated desire was to recruit a diverse student body "more representative of the population which their graduates serve" (Carter, 2015, p. 296). Kim and Sin (2008) explained the importance of diversity as leading to an increased comfort level for the library users and improved communication as users find librarians with whom they identify commonalities (p. 155). Interpersonal similarities between librarians and users leads to better understanding of the information needs of the users and thus the library can be more successful in providing library services and

building relevant collections (p. 155). Bonnet and McAlexander (2012) found in their approachability image rating study participants had significant preferences for hypothetical images of librarians of different racial/ethnic appearance depending upon their own racial group. This study further added evidence to the studies Kim and Sin cited in which persons feel more comfortable with those who appear to be like themselves.

Motivational factors for choosing librarianship. Oliver and Prosser's (2017) review of literature from 1985 through 2011 found the following motivational factors often contributing to persons choosing librarianship: "contact with a librarian, prior work in a library, dissatisfaction with current job and/or job prospects, employment opportunities, love of reading, and a sort of 'drift' factor" (p. 527). Consistent with prior studies, Oliver and Prosser's career motivation survey of academic librarians also found a majority (59.7%) had worked in a library prior to deciding to obtain a library degree (p. 528). Likewise, Taylor et al. (2010) found 42% attributed working in a library as a factor leading to the choice of obtaining a library degree (p. 39). In Oliver and Prosser's study, librarians' college majors were often fields in the humanities (55.5%) and social sciences (44.2%). Though Oliver and Prosser did not collect gender demographics, this finding was consistent with Bobbitt-Zeher's (2007) report on gender segregation in majors where women are "significantly more likely to major in social sciences, humanities, and education" (p.10).

Davis-Kendrick's (2009) study of African American male librarians' motivational factors for choosing librarianship found a high percentage (71%) had prior library work experience (p.34), but cited these reasons for choosing to become a librarian: "Help people," "Like teaching," "Like research," "'Fell into it'", "Like technology," "Like reading/literacy," "Positive community impact," and "Want to be a role model" (p. 37).

Davis-Kendrick also surveyed the participants on gender issues. Davis-Kendrick asked questions to determine whether there was concern over entering a female-dominated profession with 45% definitely not concerned though 12% were indeed concerned (p.41).

Student Enrollment and College Choice throughout U.S. Higher Education History

During the colonial era, 1636-1789, colonists established nine colleges using variations of European models (Cohen & Kisker, 2010, p. 19). At this time, enrollments were low due to lack of appeal, lack of means to afford education, and inability to meet admission requirements (pp. 26-28). Admission requirements at some institutions included student knowledge of Latin and Greek, and in later years of this period understanding arithmetic, which effectively limited entrance to those from wealthy families with the means to provide tutors (pp. 27-29). Enrollment was low, generally not more than one hundred students at each college (p. 26). Those who did attend were mostly male who would become "ministers, physicians, teachers, lawyers, public servants, or a combination of these" (p. 27), as the curriculum taught was really not necessary for employment for most of the jobs of that time period (p. 26).

From 1790 to 1869, significant growth occurred in the population of the country and in the number of higher education institutions from a population of approximately four million to over thirty-eight and half million and the number of institutions increasing from 11 to 240 (Cohen & Kisker, 2010, p. 58). The growth in the number of students increased from 1,050 in 1790 to 61,000 in 1869 (p. 58). Many of the colleges struggled financially and thus began competition in recruiting students with each asserting claims of each institution's unique benefits (p. 69). At the same time, entrance requirements of knowledge of additional subjects continued to increase though not always enforced (p. 73). Although there were approximately 20 percent women students by the beginning of

the next era (p. 123) and "a few African Americans" (p. 71) enrolled, it was still predominately, a white male environment with the exception of a few colleges established specifically for women (p. 76).

As the country recovered after the Civil War, U.S. industries and wealth expanded as did higher education during the timeframe Cohen and Kisker (2010) call the University Transformation Era, 1870-1944 (pp. 110-111). New types of institutions opened to serve a broader variety of students. These institutions included historically black colleges, many more women's colleges, junior colleges, and state colleges (pp. 118-122). Some of the older colleges expanded to include graduate and professional programs and became universities (p. 113). Demand grew for education as the belief grew that education could result in upward mobility (p. 123). Although higher education as a whole served more students than ever in history, some institutions used admissions criteria to give preference to students of their traditional group over students from other races/ethnicity, class, gender, and religions (pp. 117, 130).

The period following World War II, 1945-1975, sustained very large growth in higher education's number of students enrolled from 1,677,000 in 1945 to 11,185,000 in 1975 (Cohen & Kisker, 2010, p. 188). Millions of veterans enrolled due to higher education benefits from the passage of the Servicemen's Readjustment Act of 1944 increasing the expectations of many that college could be accessible for everyone instead of only the wealthy (p. 195). Landmark court rulings and civil rights acts further led to the view of college being open for all.

Cohen and Kisker (2010) attribute this era's expansion of public and private institutions to the factors of "institutional variety; decentralized authority; multiple funding sources; and a belief in open access" (p. 199). The federal government provided

funds for building through the Higher Education Facilities Act of 1963 and other acts increased student financial aid (Ihlanfeldt, 1980, p. 4). Institutions continued to compete for students and began to implement measures to improve access and support to members of minority groups, who formerly institutions had denied access (Cohen & Kisker, 2010, pp. 209-210). During the 1950s through 1970s, a few researchers began to explore the decision making process of students (Holland, 1958; Holland, 1959; Ihlanfeldt, 1980).

From the mid-1960s to early 1980s, the college enrollment rates of high school students remained steady instead of increasing as in the prior era (Cohen & Kisker, 2010, p. 332). The enrollment rate coupled with fiscal uncertainties, administrators' concern over excess capacity due to prior college building, the public's questioning of value, and governmental pressures led those in higher education to turn to marketing to achieve their enrollment goals (Ihlanfeldt, 1980, pp. 5-10.) As a part of marketing, one should understand the behavior of the target market leading to increased research into college choice, which formerly had received little attention (p. 12).

Between 1975 and 1993, major changes occurred in sources of revenue for higher education from federal government declining from 16% (1975-1976) to 12% (1992-1993) and state government revenue declining from 31% to 24% (Cohen & Kisker, 2010, p. 395). This led to increases in tuition from 21% (1975-1976) to 27% (1992-1993), as other sources of revenue did not sufficiently increase to offset the government's decline in support (p. 395). Ihlanfedt (1980) noted student behavior related to college choice in the face of tuition cost as a factor, which institutions must consider in marketing (p. 26). In addition to tuition costs, there were other areas to consider in maximizing enrollment. At the time of Ihlanfedt's writing, college student choice research had only "limited success" (p. 21) in "isolat[ing] the effects of noncognitive factors on college choice" (p.21). Even

with those limitations, Ihlanfedt lists these important student choice factors from a review of the literature: "the secondary school attended," "the education of the parents," "the family's economic status," "colleges attended by older brothers and sisters," "extracurricular interests," and "religious preference" (pp. 21-22).

Diversity in the student body increased from 1975 to 1993 with more Black students enrolled, increasing from 42% of Black high school students enrolling to 56% by 1993 (Cohen & Kisker, 2010, p. 333). The percentage of women increased to be on par with men (p. 333) and the number of degrees awarded at the associate's, bachelor's, and master's level exceeded men's numbers (p. 336). Ihlanfeldt (1980) noted women students and minority students as two groups with potential growth (p. 54) and provided examples of using college choice research to inform recruiting and marketing decisions. For example, in Ihlanfeldt's Student Mobility Paradigm (four quadrant model), black students positioned in the medium to high financial need and medium to high ability quadrant are more mobile, more willing to move a distance from home to attend college, an exception compared to other groups (pp. 20, 30).

Chapman (1981), who proposed a conceptual model for understanding college choice, attributed the lack of prior interest in studying college choice to the previous continued growth in enrollments. Chapman's model portrays student choice as a combination of student characteristics of socioeconomic status, level of educational aspiration, aptitude, and high school performance along with external influences such as significant persons in a student's life, characteristics of the college (cost, financial aid, location, programs), and the college communication with the student (pp. 492-498). All those influences combine to create general expectations on the part of the student and then the student decides upon college(s) to which to apply. The college makes choices

based on the characteristics of the student, and ultimately a student chooses to enter college.

Shortly after Chapman (1981) proposed a basic student choice model, Litten (1982) found it to have limitations since it did not account for differences for various groups of students. Litten reviewed six research projects with a focus on how the choice process differs by race, sex, ability (as measured by standardized test scores), parents' educations, and geographic location. Another concern of Litten's was the financial aid process and its influence on the college selection process. Litten expanded Chapman's model by incorporating these additional factors.

By the end of the 1994-2009 timeframe, diversity in the student body expanded within race, ethnicity, and gender to be more reflective of the U.S. population (Cohen & Kisker, 2010, p. 464.) The number of women students exceeded males at undergraduate and graduate levels (57 and 60 percent respectively) (p. 465). Although African-American and Hispanic students had made gains in enrollment, the percentages of high school students enrolled in college the fall after graduation, continued to be less than of White students (White, 69%; Black, 56%; Hispanic, 58%) (p. 466). Additionally, these students were more likely to enroll in lower price institutions, with first-time undergraduates in Fall 2001 represented at a greater level at two-year institutions than four-year institutions (African-Americans 14% at two-year vs. 11.1% at four-year; Hispanics 12.2% at two-year vs. 6.6% at four-year institutions) (Perna, 2006, p. 99).

In 2016-2017, total student enrollment in the United States was 19.8 million including 3.0 million who were graduate students (McFarland et al., 2018). By gender, undergraduate enrollment in Fall 2016 was 56% female and 44% male (p. 158). Graduate enrollment was 59% female and 41% male (p. 166). Undergraduate enrollment from

2010 to 2016 declined for all racial/ethnic groups with the exception of Asian/Pacific Islander which remained steady (p. 159). Examining the 2016 undergraduate enrollment rate of 18-24 year olds by race/ethnicity showed Black students were not enrolled at as high a rate as Whites (36% vs. 42%), but Hispanic students were close to the rate of Whites at 39% (p. 155). Notably, there was a decline in percentage of fall enrollment of high school graduates for all racial/ethnic groups from 1993 percentages of White at 63%, Black at 56%, and Hispanic at 55% (see Table 5.2, Cohen & Kisker, 2010). Graduate student enrollment declined for White students (69% to 64%), remained steady for Black students (14%), and increased slightly for Hispanic and Asian/Pacific Islander (from 7% to approximately 8%) (pp. 167-168).

Access to college by some groups has improved as evidenced, for example, by the enrollment rate of Hispanic 18 to 24 year-old students nearing the rate of enrollment of White students (McFarland et al., 2018, p. 155). A key matter becomes college choice as some racial/ethnic groups are underrepresented at 4-Year colleges and overrepresented at 2-Year colleges, and are underrepresented at elite colleges (St. John, Daun-Barnett, & Moronski-Chapman, 2013, pp. 92-95, 100).

History of Graduate Student College Choice Research

In the 1980s and 1990s, some researchers began investigating graduate student choice (e.g., Chapman, 1981; Hearn, 1991; Kallio, 1995; Malaney, 1987; Olson & King, 1985), which earlier had not received much attention. Olson and King (1985) attributed this lack of interest to an elitist selection process for graduate students, and a sufficient supply of students and resources (p. 305). By the 1990s, concern over a large enough pool of doctoral graduates to meet the demand in higher education and industry led to a new interest in studying graduate student choice (Kallio, 1995; Webb, Cocarri, & Allen,

1997). The researchers of this timeframe tended to take sociological or economic approaches and conduct quantitative research (Perna, p. 101).

Although by 1985 research on undergraduate student choice existed, Olson and King (1985) could not identify any research on graduate student choice of institution prior to their study of prospective graduate students of a large public Midwestern university. Olson and King's quantitative study surveyed prospective students on aspects of their initial consideration of the university and the factors that influenced them to choose the institution. For the 303 students responding, the factors most likely to influence the decision were found to be "employment in community or area at time of enrollment decision," "speed of acceptance into program," and "previous undergraduate attendance at the university" (p. 307, pp. 311-312). One interesting finding was the significant differences in factors among academic colleges within the university, particularly in the area of amount of assistantship stipends (x^2=29.013; p=.0001) (p. 311).

Malaney's (1987) quantitative study of new graduate students at a large public research university examined the reasons students decided to go to graduate school, how they obtained information about the program or school, and why they chose a particular institution. Malaney analyzed the 1,073 responses by demographic characteristics for the variables of "gender, ethnicity, citizenship, age, undergraduate grade point average, and part-time/full-time enrollment status" (p. 251). Malaney found differences between groups of students, and found differences in results from Olson and King's (1985) study leading Malaney to recommend that each institution conduct their own study since results may vary between institutions (Malaney, p. 257).

Economic and Sociological Theories

As interest in higher education has grown in predicting and managing student enrollments, academic researchers have often relied on economic and sociological concepts and theories as the basis of college choice theories and models. An overview of these provides background to the development of Perna's (2006) theory, which serves as the theoretical basis of this study.

Human capital theory. Human capital traces back in economic literature at least as far as Adam Smith's work in 1776, but the modern concept of it dates to the late 1950s and early 1960s in the works of Theodore Schultz, Gary Becker, and others (Becker, 1993; Jacobsen, 2004; LaCost, 2006). Similar to physical capital, which is investment in physical resources, human capital is the increased capacity due to investment in people whether in education, other training or ways of increasing knowledge, or health care, for example (Becker, 1962; LaCost, 2006; Paulsen, 2001). Becker (1962) stated, "all improve the physical and mental abilities of people and thereby raise real income prospects" (p. 9). Becker analyzed the effect of education on earnings using economic formulas to reflect the increased earnings return on the investment of education.

Social capital theory. As another concept to expand on types of capital, Coleman (1988) introduced social capital to explain this capital, which produces actions due to the relations between or among individuals or groups. Its forms include trust between persons or groups, which facilitates financial or other transactions; obligations and expectations, which build between individuals or a group; information sharing; and norms in a community or society (Coleman, 1988). Coleman used the example of tying social capital in the family and in the community into the creation of human capital through their influence on the dropout rates of high school students (pp. S109-S115).

Coleman looked at presence of one or two parents, siblings, mother's expectations of the child's education, and the number of times the family had moved. The latter was an indicator of level of community support, larger if fewer moves. Coleman's study showed that the presence of these factors reduced the probability of dropping out (p. S119).

Cultural capital. The concept of cultural capital comprises the "tastes, knowledge, attitudes, language, and ways of thinking that we exchange in interaction with others" (Witt, 2016, p. 241). Pierre Bourdieu (1973/2006), who introduced the concept, described it as "the structure of the distribution of instruments for the appropriation of symbolic wealth socially designated as worthy of being sought and possessed" (p. 259). Bourdieu wrote about the role of education in reproducing cultural capital specifically "the reproduction of the structure of power relationships and symbolic relationships between classes, by contributing to the reproduction of the structure of the distribution of cultural capital among these classes" (p. 257). Lynch and Baker (2005) discussed how education credentials create a *State Nobility,* similar to the titles of royalty, which supports inherited privileges. Likewise, in the library field, Brook et al. (2015) called for librarians to recognize the ways that White privilege manifests in higher education and academic libraries.

Wilson, Douglas, and Nganga (2013) and Yosso (2005) have expressed concerns about the devaluing of cultural capital of non-Whites and favoring the cultural capital of Whites. In Wilson et al.'s recommendations for steps for transformative leaders to take to strengthen the likelihood of success of African-American students, one finds a call to leaders to critically self-reflect on one's own beliefs on cultural diversity and to decenter White privilege (pp. 125-126). Yosso offers a model of community cultural wealth, which broadens the forms of capital to include:

- aspirational (hope beyond barriers);

- linguistic (communication strengths due to skills with multiple languages);

- familial (family and community bonds, and funds of knowledge);

- social (networks);

- navigational (skills in navigating through institutions which favor Whites); and

- resistant capital ("knowledges and skills fostered through oppositional behavior that challenges inequality" p. 80), pp. 77-80.

C. Dudley-Marling and A. Dudley-Marling (2015) call for a culturally responsive approach to teaching all students with the view all have rich stores of cultural knowledge (p. 46).

Stratification systems and status attainment. Peter M. Blau and Otis Dudley Duncan were early researchers into the study of stratification systems, status attainment, and social mobility (Holmwood, 2006). Stratification systems are hierarchical systems of layers of status, power, and influence within which individuals or groups exist (Blau, Duncan, & Tyree, 1967/2000; Witt, 2016). Status attainment is the process of obtaining or achieving a new status (Blau et al., 1967/2000). Social mobility is movement horizontally and vertically within the layers of society (Witt, 2016).

Blau et al.'s (1967/2000) research questions in *The Process of Stratification* were "how and to what degree do the circumstances of birth condition subsequent status?" and "how does status attained (whether by ascription or achievement) at one stage of the life cycle affect the prospects for a subsequent stage?" (p. 487). Blau et al. (1967/2000) created a model, which quantified the effect of the father's educational attainment and

occupational status on the son's educational attainment, first job, and later occupational status. Blau and Duncan's book published in 1967, *American Occupational Structure*, is a classic study of stratification due to their creation of a theoretical model combined with data analysis (Holmwood, 2006).

Examining graduate education through the perspectives of Bourdieu's social reproduction theory and Blau's status attainment concept, Posselt and Grodsky (2017) provided a contemporary review of the role of graduate education in continued social stratification, specifically how it contributes to "reinforcing, reflecting, and/or reducing inequality" (p. 354). They called for more research into these four areas of graduate education: 1) graduate school choice, 2) the choice of field of study, 3) economic and non-economic returns on graduate degree investment, and 4) graduate education's role in social mobility and social reproduction (pp. 369-371).

College Choice Theories and Models

As interest grew throughout the history of higher education in managing enrollment more effectively, so too the growth in research to inform decision making on the part of admissions officials, marketing professionals, and others (Park & Hossler, 2014). College choice researchers have often used sociological and economic theories as the basis of their theoretical frameworks. Park and Hossler categorized the major research approaches as economic, sociological, information processing, and combined models (pp. 50-52). Factors influencing college choice, which many studies have found may predict whether or not students attend college and which college they choose, were grouped by Park and Hossler into: personal characteristics (gender, race/ethnicity), family income and socioeconomic status, social and cultural capital, academic ability, high school attended, college information sources, peer influences, costs, and financial aid (pp. 52-

55). Additionally, researchers have focused on college choice by race/ethnicity for White students, African American students, Latino students, and Asian students (pp. 55-62).

Economic approach. Paulsen (2001) cites Becker and other human capital theorists as viewing student college choices as investment decisions (p. 56). This view assumes that students through rational action compare the benefits and costs of obtaining a college degree (Paulsen, 2001; Park & Hossler, 2014).

Research with a focus on a cost-benefit analysis on college choice found the following contribute to an increased likelihood of enrollment or persistence:

- expectation of greater earnings due to the college degree, especially for major field of study such as business or engineering;

- lower direct costs of attending; higher scholarships, grants or loans, especially, grants;

- lower opportunity costs (lost earnings while in college); and

- expectation by some students of spending today in order to earn possibly more in the future (Paulsen, 2001, pp. 61-62; Paulsen & Toutkoushian, 2008, pp. 16-18).

Paulsen and Toutkoushian (2008) credited human capital theory with being the most heavily used theory in college choice research. Even though human capital theory is useful for analyzing the costs and benefits associated with the college choice decision, Paulsen and Toutkoushian acknowledged the factor of student preferences, which researchers from other social sciences could provide insights. Thus, they advocated for a multidisciplinary approach.

Sociological approach. Researchers using the sociological approach look at the factors of social and cultural capital such as family characteristics (i.e., income, education), family and community influences, and interactions and the likelihood of these interactions contributing to students' preparation for college and their college aspirations (Park & Hossler, 2014). Determining how social status influences college choice is a focus of this research (p. 51).

An early example of using the sociological approach was Hearn (1991) who used a sociological theoretical perspective of status attainment to examine the socioeconomic ascribed and academically attained characteristics of high school graduates with their college destinations. Hearn's concern was to improve a model for studying college choice in order to inform policy decisions related to barriers to college choice in the stratification of higher education. That stratification was from lower prestige, less well-funded, relatively open admission institutions to highest prestige, very well funded, selective institutions. Using data from the National Center for Education Statistics, *High School and Beyond* survey of 30,000 seniors (class of 1980), Hearn found academic indicators had the most effect on admission to selective institutions, but the ascribed characteristics of parents' education and income had significant effects as well (p. 164). Hearn's model of conducting multiple regression analysis on both ascribed background factors and academic acquired characteristics explained 27% of the variance in college selection (R^2=.27, $p \leq .001$, see Table 2, p.166). Not to be overlooked are the background factors of race/ethnicity and gender, as well as the socioeconomic characteristics of parental education and income, which explained 10% of the variance (R^2=.10, $p \leq .001$, see Table 2, p. 166).

Park and Hossler's (2014) review of literature related to social and cultural capital found "parents' educational attainment, parental involvement in their child's education, and parental expectation toward their child are strongly associated with the child's college aspirations, application behaviors, and college enrollment decisions" (p. 53).

Information processing approach. This approach to college choice research examines the access, or lack thereof, of information, which contributes to students' college decision-making (Park & Hossler, 2014). Researchers consider these as "primary college information channels…parents and siblings, high school teachers and counselors, college admissions personnel, recruitment materials, college guidebooks, and college fairs" (p. 51).

Combined approaches. In the earliest of college choice research, researchers chose either economic or sociological approaches, but studies that are more recent use combination approaches (Perna, 2006). Park and Hossler (2014) provided a definition for combined approaches as those involving multiple decision-making stages (p. 52). They described models such as Don Hossler and Karen Gallaher's model of developing aspiration for going to college (predisposition), gathering information about the options (search), and then making the choice of a particular college (choice) (p. 52). Hossler and Gallagher's (1987) predisposition phase combines student characteristics with socioeconomic factors, parents' and other significant persons' influence, and school educational activities to create a student's aspiration to attend college (pp. 210-213). The search phase consists of both students searching for colleges that meet their expectations and colleges searching for students, with the students creating a choice set from which they choose in the last stage through communications and interactions with the colleges. Later researchers have continued to use Hossler and Gallaher's model and have found

socioeconomic factors such as family income, parental education, and parent's occupation have strong positive roles in the students' progress through all these stages (Hurtado, Inkelas, Briggs, & Rhee, 1997; Perna, 2006, p. 132).

Perna's college choice research. In Perna's (2000) study of differences in college choice by race and ethnicity, Perna chose to include variables for aspiration for a college degree, parental encouragement, school personnel encouragement, parents' education, and peers' encouragement to represent social and cultural aspects that could be influential on college decision-making (pp. 134-135). The economic aspects examined were direct costs of tuition, availability of financial aid, state unemployment rate, expected future income, family income, and academic ability as measured by test scores and by participation in a curricular program (pp. 122-124). Perna's study found differences by race in the influence of various social and cultural factors on enrollment decisions.

In another study, Perna (2004) again used the combination approach in a graduate school choice study by gender and race/ethnicity. The conceptual model Perna used assumed "the decision to enroll in a post-baccalaureate program is a function of sex, race/ethnicity, expected costs and benefits, financial and academic resources, and cultural and social capital" (p. 493). Perna obtained data for the study from the 1997 follow-up to the National Center for Education Statistics' *Baccalaureate and Beyond* survey of 1992/93 bachelor's degree recipients. This survey tracks the recipients' experiences after college including whether or not they have entered into subsequent higher degree programs. Gender appeared to have a relationship to enrollment as more persons with higher undergraduate grade point averages tended to enter graduate programs and more women than men had those higher grade point averages (p. 518). By adding variables

reflecting social and cultural capital, Perna was able to produce a model with a better fit to explain graduate enrollment than relying on economic measures alone (p. 501). For example, parents' education and the value of desiring to influence the political structure were statistically significant predictors of graduate enrollment (p. 504). Additionally, Perna found differences in the likelihood of entering graduate programs varied by race/ethnicity and the intersectionality with gender (p. 520).

Drawing upon prior research with economic, sociological, and combined approaches, and incorporating the "student choice construct" proposed by Paulsen and St. John (2002), and St. John and Asker (2001), Perna (2006) developed a proposed conceptual model (p.117). Perna's model situates the college choice decision within layers of contexts. The human capital aspects include the development of the student's demand for higher education through academic preparation and achievement combined with a supply of family income and financial aid leading to a calculation of expected benefits and costs. This human capital investment model resides within layers of influences, which include:

- *Habitus (layer 1)* (e.g., demographic characteristics, cultural capital, and social capital),
- *School and community context (layer 2)* (e.g., influences of school and community resources, supports, barriers),
- *Higher education context (layer 3)* (e.g., source of information, admission process, location, institutional characteristics), *and*
- *Social, economic, & policy context (layer 4)* (e.g., demographic changes, economic conditions, public policies) (pp. 116-119).

Perna's (2006) conceptual model is the basis of the theoretical approach of my

study.

Use of combined approaches. Engberg and Wolniak (2009) used a model of

examining college enrollment choice through social and cultural capital perspectives and

through economic perspectives using human capital theory influenced by Perna's (2006)

model. They studied data on over 16,000 students enrolled at eight private institutions.

Their study found some factors influence college enrollment decisions more than other

factors across the various racial groups though the "human capital variables were more

consistent across race groups, and more important overall in explaining enrollment

decisions (Engberg & Wolniak, p. 2276)."

Davies, Qiu, and Davies (2014) approached their study of students' intentions to

participate in higher education by using both sociological theories (e.g. cultural capital)

and economic theories (e.g. human capital theory). They found each framework provides

insight into how students make their choices. The factors most associated with the

intention of going to university were the sociological factors of parental education and

cultural capital, and the economic factor of students' expectations of greater future salary

due to education (p. 820). Davies et al.'s (2014) study illustrates the advisability of using

both sociological and economic theories in studying college choice.

English and Umbach (2016) adapted Perna's (2006) model for use in examining

graduate student college choice among bachelor's degree recipients of the *2000/01*

Baccalaurate and Beyond data set. They focused on layer one of Habitus and layer two of

School and Community using the undergraduate institution in place of high school and

community, naming it "Undergraduate Institution Context" (p. 180). The layer-one

variables included demographic characteristics and human, cultural, and social capital

indicators. The layer-two variables regarding the undergraduate institutions included the type of institution by Carnegie classification, Historically Black Colleges and Universities, graduation rate, and control type (public, private, for profit).

English and Umbach's (2016) study found no statistically significant difference by gender on graduate choice, which differed from Perna's (2004) results (English & Umbach, 2016, p. 201). Perna's (2004) findings and English and Umbach's (2016) findings aligned, however, on showing that African-American students were more likely than White students to enroll in graduate school (p. 202).

Douglas' (2017) use of Perna's model. Douglas' (2017) study used Perna's (2004) theoretical framework to examine graduate student enrollment in business schools. Douglas used the *Baccalaurate and Beyond Longitudinal Study* data set from 2012. In addition to variables Perna (2004) examined, Douglas' study focused on gender differences among those who chose the graduate program of business. The study found enrollment differences by gender, race/ethnicity, first-generation by gender, type of institution by control (private, public, for-profit), and Carnegie classification.

Graduate Choice Factors

Reviews of the literature (English & Umbach, 2016; Mullen et al., 2003; Posselt & Grodsky, 2017) indicate that research on graduate choice is a relatively recent line of study with few studies based on theoretical frameworks so far. Since the topic of this study is the examination of factors influencing the choice of the graduate program of library and information science, a predominately, White female field, this section reviews the research on the choice of field of study, gender, and race/ethnicity. Although there needs to be more study, it is possible to identify some research that addresses those

factors, which often intersect, and to draw upon some relevant research from undergraduate choice.

Choice of field of study. As noted in the library field, so also are some other fields predominately segregated by gender, such as women in the fields of nursing and education, and men in fields of engineering and computer sciences. Mullen and Baker (2015) in a study of 1.3 million bachelor's degree recipients found that in addition to segregated fields of study, the amount of the gender gap varied by the selectivity of the institution, but it existed at all types of institutions (see Table 4 and 5, pp. 181-182). Although this study documented gender segregation, it did not explain why it occurs. It does suggest that future researchers need to determine why the preferred fields of study varied by gender and by level of institutional selectivity. Future research should also consider the influences of educational approaches by gender as advocated by Grogan and Dias (2015), who wrote we should be "changing the discourse around gender" (p. 120).

Posselt and Grodsky (2017) also found gender gaps as prevalent for fields of study. Using *National Survey of College Graduates* data, they calculated indices of dissimilarity across majors over the decades from pre-1970s through the 1990s. They calculated this index as a measure that indicates the "percentage of men or women who would need to change fields to reach gender parity across majors" (p. 368). For example, 41% of males in the 1990s would have needed to change field of study to achieve balance by gender across majors (see Table B1, p. 369).

DiDonato and Strough's (2013) study of college students' gender-typed attitudes about occupations found through logistic regression analysis that both men and women held views that feminine occupations were more appropriate for women than for men (p.547). Despite those attitudes, the male students' attitudes about gendered occupations

did not predict choice of major or occupation (p. 545). DiDonato and Strough suggested there might be additional reasons for men's choice, which warrants more research.

College students' perceptions of gender bias or gender discrimination within occupations was found to be the most important predictor of choice of major in Ganley, George, Cimpian, and Makowski's (2018) study which combined *Education Longitudinal Study of 2002* data with survey data of undergraduate students. The students were asked to rate their agreement with statements about the characteristics of college majors, which included: "(a) math orientation, (b) science orientation, (c) gender bias (against women), (d) helpful orientation, (e) money orientation, and (f) creative orientation (p. 462)." Although this study's questions on gender bias were in relation to bias against women, the study found that both men and women perceived gender bias (p. 477). The authors suggested it is important to improve the gender climate in all fields in which under representation exists of either gender (p. 478).

Graduate students appear to differ in aspirations by undergraduate major and graduate program of study. For example, English and Umbach (2016) examined graduate school aspiration by undergraduate major and found differences, particularly on the part of education majors who "were more than two and a half times as likely to aspire to graduate school than their peers who majored in business…" (p. 200). Zhang (2005) had similar findings with business graduates. Zhang also found undergraduate major influenced the probability of attending doctoral programs, with business students less likely to enroll and persons with liberal arts majors more likely (p. 324).

Goyette and Mullen (2006) using data from the *National Educational Longitudinal Study, 1992-1994*, and the *Baccalaureate and Beyond Longitudinal Study, 1993-1997*, examined undergraduate major and the likelihood of entering graduate

school. They classified the majors into arts and sciences, and vocational majors, which included business, education, engineering, preprofessional, and other occupational type majors (see Appendix A, p. 527). They found that all arts and sciences majors were more likely to enter graduate programs than those with vocational majors (p. 518). Monaghan and Jang (2017) found that those with majors with lower income potential, predominately arts and sciences, were more likely to enter graduate school (p. 733).

Mullen et al. (2003) discovered parental education influences graduate school enrollment for those in all programs of study with the exception of master's of business administration students. Posselt and Grodsky (2017) cited Mullen et al. (2003) and other literature as evidence of the continued role of social origins in reproducing social stratification.

Kirk (1990) surveyed graduate students at a small regional university in the program areas of "business administration, education administration, public affairs, counseling, human resource development" (p.36). The variables most affecting choice of graduate major were "opportunities for engaging in more fulfilling work," "employment opportunities," and "possibilities for advancement" (p. 37). Kirk, using factor analysis, split the results into two groups of students: those who favored opportunity factors (opportunity-oriented) and those who favored quality of education factors (quality-oriented). Students from the "helping" professions of education administration and counseling were more likely to be in the quality-oriented group, which has important implications to the characteristics and recruitment of library science students, members of another "helping" profession.

Graduate student choice by race/ethnicity and/or gender. Taking a qualitative approach, interviewing 24 racially and ethnically diverse graduate students and

professional students, Morelon-Quainoo et al. (2011) identified factors regarding college choice that varied by institution. Those who chose the elite private institution were more concerned about the university's reputation, while those who chose the highly ranked public university were more concerned about financial aid (p. 18). Both groups were interested in a supportive, inclusive environment and valued diversity on campus (pp. 16-18).

Ramirez's (2013) study consisted of interviews of 24 Latinos/as doctoral students, enrolled or those who had already completed, at a public research university in the Southwest United States. Although factors influencing their decisions to choose that university varied, the most common were the location close to home, the faculty, financial considerations, campus climate (fellow-Latinos/as on campus, friendly department), and only program that admitted them (p. 28).

Poon (2014) interviewed 25 Asian American students sampled from those enrolled at a large public research university with 25,000 undergraduates. For Asian American students, family desires and social interactions were important influences on career choice. Poon found five of the 25 Asian American students interviewed shared a concern of racial isolation if one chose a field of study outside of science, technology, engineering, and mathematics fields since many of the social sciences and humanities students with whom they had classes were White (p. 509). Poon also stated a lack of role models in those fields as affecting choice of vocation (p. 509).

Strayhorn, Williams, Tillman-Kelly, and Suddeth (2013) used data from the *Baccalaureate & Beyond Longitudinal Study for 1993/1997* to examine the gender differences in Black students' responses to 16 factors one might consider in choosing a graduate institution (p. 180). Interestingly, both black men and women's top choices

included 1) reputation of the school and faculty, 2) location close to home or work, and 3) availability of the desired program (p. 182). Women more often were concerned about financial aid than men were (p. 183).

Library Science Choice

Although there is concern on the part of librarians to increase diversity, few researchers have conducted graduate choice research using any of the economic, sociological, or combination frameworks to examine choices by undergraduate major, race/ethnicity, and gender. There have been several surveys over the years to determine motivations or characteristics of those choosing library science programs including, for example, McCook, Moen, and American Library Association (1989). This study did gather demographic information of gender and ethnicity, and asked why the students chose library studies. Ard et al.'s (2006) survey of library science students at one university collected educational background degrees and reasons for choosing librarianship, but did not address gender or ethnicity. Oliver and Prosser (2007) also conducted a survey to explore fields of undergraduate degrees and motivations for choosing academic librarianship but did not collect data on gender or ethnicity. Fifty-five percent of their respondents' degrees were in the humanities and 44.2% in the social sciences (p. 529).

Morgan, J.G. Marshall, V. Marshall, and Thompson (2009) did use a sociological approach, life course perspective, to create a workforce survey project of library science graduates from 1964-2005 in North Carolina. Rathbun-Grubb and Marshall (2009) analyzed workforce data. Although they acknowledged the lack of diversity in the workforce, the gender and diversity gaps in advancement, and provided some statistics, they did not delve into these issues very deeply. Morgan, Farrar, and Owens (2009)

analyzed the same survey and provided findings for salaries and reasons for entering the profession by gender and race/ethnicity, which varied among the groups. For example, African Americans cited "working with computers" as a reason for choosing librarianship more often than other groups and mentioned recruitment to the field as being important (p.204).

McCook and Moen (1992) looked at factors important to students in selecting library and information master's degree programs and tabulated the results by enrollment status, in-state/out-of-state, gender, and ethnicity. Reasons for choosing a particular library science program varied across ethnic groups with many different reasons cited by different ethnic groups. In common for all was the reason of 'location.' American Indian, Hispanic, and Black students ranked 'financial assistance' higher than did Asian Americans and Whites (pp. 216-217, 219). The variation in reasons for college choice by ethnic group indicates the need for more research in this area.

Dali and Caidi (2016) surveyed library science students to gather information about their perceptions of library and information science field, careers, their respective programs, factors on deciding upon library and information science, and their ideas on improvement of recruitment (p. 501). Although they collected sex, country of birth, and other demographic data, they did not collect race/ethnicity, nor did they report findings by sex or country of birth. The top reasons for choosing a particular graduate school included "Reputation of the university and reputation of faculty members," "Location (e.g. city, state)," and "Economic considerations (tuitions, scholarships, financial aid)" (see Table VI, p. 512).

Summary of Review of Literature

The literature review of social justice concepts, social justice specifically in the library and information sciences field, and issues regarding diversity in the library field provided a context for this research project.

Conducting a review of the history of college choice research and graduate choice research revealed that both are rather recent contributions to the literature in higher education, which supports recruitment and admissions. The graduate choice research is most recent and has used existing models for undergraduate choice, based on economic, sociological, information processing perspectives or some combination of those perspectives and theories.

A search through the literature for studies using Perna's combined economic and sociological approach to evaluate the literature combined with reviewing the decision making factors by race/ethnicity, and gender found few studies with that combination for graduate students in general and none using Perna's model for library science. This calls for the need to do more research to add to an understanding of the motivations and characteristics of those who choose to study a particular field, in this case, library and information science.

Chapter III: Methodology

This study uses the work of Perna (2004, 2006) who proposed a college choice model, which considers an individual's demographic characteristics of gender, race/ethnicity, socioeconomic status, and other human, cultural, and social capital factors as contributing to making college choices. The purpose of this study is to use Perna's first layer of the model as a basis of analyzing the Baccalaureate and Beyond Longitudinal Study 2008/2012 (B&B: 08/12) for the specific population of those who chose to enroll in a master's of library science program. The use of the first layer of the model is consistent with Perna's (2004) use in analyzing the 1997 follow-up data from an earlier Baccalaureate and Beyond Longitudinal Study 1992/93 (B&B:93/97) and Douglas' (2017) use of the B&B:08/12 data set. Investigating the other three layers are beyond the scope of this project.

My post-positivist, quantitative study focuses on the associations between variables proposed in Perna's model to determine which factors influence the likelihood of attending a library science graduate program. After determining the findings through a post-positivist, quantitative study, I will reflect upon the findings with a critical theory lens to recommend a diversity recruiting action plan in Chapter V. This blending of aspects of multiple theories is suggested by Lincoln et al. (2011) (p. 117). Mehra et al. (2006) call for adapting research methodologies to social justice issues (p.8), which is also relevant to this study.

Research Design

This study uses a post-positivist, quantitative design. As described in Lincoln et al. (2011), post-positivists view reality as being probabilistically knowable (Table 6.1). My study uses logistic regression, a statistical technique that predicts probabilities

(Menard, 2010), to analyze the B&B: 08/12 data set. Researchers use logistic regression when needing to examine the relationship between a dependent variable and one or more independent variables (Menard, 2010, p. 730). In this study, the dependent variable or "outcome" is whether a student enrolled in a master's of library science graduate program, thus a dichotomous variable. The independent variables are those that may predict the outcome variable. Those include various economic, social, cultural, and other factors. Since the interest of my study is to examine what may predict the outcome of enrolling in a master's of library science, I chose logistic regression.

It is also important to use logistic regression due to it being the statistical technique used by Perna (2004, pp. 497-499) and Douglas (2017, pp. 56-58) when analyzing the same or similar data. Others cited by Perna used this type of statistical analysis as well when examining the interactions between variables.

The PowerStats software on the U.S. Department of Education's National Center for Education Statistics (n.d.) site offers logistic regression for analyzing Baccalaureate and Beyond datasets. This constitutes the third reason to use this statistical model since one can run the analysis online at that site.

Logistic regression. The equation for logistic regression when there is a dichotomous variable as the dependent variable with multiple independent variables is $\text{logit}(Y) = \alpha + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_K X_K$, with Y as the dichotomous dependent variable (Menard, 2010, p. 730). The constant is α, β_1 is the regression coefficient for the first independent variable, X_1 is the first independent variable, and so forth through X_K, the last independent variable, with K being the number of independent variables. If Y is represented as the probability of either the dependent variable being in a category coded as 1 or as 0, then one can represent that equation of the odds of being in the category as 1

as $P_1/P_0 = P_1/(1 - P_1)$ (p.730). Logit(Y) is then the natural logarithm of the odds, $\ln[P_1/(1 - P_1)]$ (p. 730).

Population of the Study

  The choice of using the 2008/12 Baccalaureate and Beyond Longitudinal Study data set (B&B:08/12) was due to its availability as a national data set from the National Center for Education Statistics (NCES) containing data on post-baccalaureate enrollment and other variables four years after the earlier 2008 NCES data collection on bachelor's degree recipients. This will allow analysis of choice of post-baccalaureate educational program along with other factors. Although B&B: 08/12 data may be considered dated it is the most current data set available as of 2019 from the NCES. Future research could examine the 2018 follow-up data of the 2007/08 cohort and examine the new B&B 2016 cohort data when those data sets are released (U.S. Department of Education, National Center for Education Statistics, "Baccalaureate and Beyond Longitudinal Study (B&B): About B&B", n.d.). Since Perna (2004) used the 1997 follow-up to the Baccalaureate and Beyond 1992/93 survey (p. 491) and Douglas (2017) used the B&B:08/12 set, the use of this data set will contribute to further testing of Perna's (2004, 2006) model for studying college choice.

Data Collection

  The research approach of the B&B:08/12 study is primarily quantitative survey research. The general purpose of survey research is to collect and analyze data obtained through a survey or questionnaire in order to describe the characteristics of a population (Mertler & Charles, 2008, p. 225). The B&B:08/12 study combines survey data with data obtained on individual students from these federal databases:

- Central Processing System (CPS) (data obtained from Free Application for Federal Student Aid);

- the National Student Loan Data System (NSLDS) (data on those awarded federal loans or Pell Grants); and

- the National Student Clearinghouse (NSC) (data tracking student enrollment among participating higher education institutions) (Cominole, Shepherd, & Siegel, 2015, pp. 59-60).

The B&B:08/12 researchers gathered data on these core elements: "degree attainment, continuing or graduate education, employment, debt and finances, and interest in or preparation for K–12 teaching" (Cominole, et al., 2015, p. iii). Cominole et al. acknowledge the influence of Becker's human capital framework in the design of the B&B:08/12 survey (p. 3). The researchers also gathered advice from a Technical Review Panel consisting of academics (including Perna), federal panelists across government agencies, consultants, and subcontractors (pp. iii, A-3-A-7).**Participants and sampling.** During the timeframe of July 1, 2007 through June 30, 2008, approximately 1.6 million students met graduation requirements for a bachelor's degree (Cataldi et al., 2014, p. 2). To represent those graduates, researchers used a sampling design, which resulted in a sample of 137,800 students (Table B-3). The 2007-08 National Postsecondary Student Aid Study (NPSAS) sampled these 137,800 students (p. 1). Of the 137,800 students, 132,800 were determined to be eligible for the B&B study (Table B-3), based on eligibility criteria, which included attending 1,940 eligible institutions (Table B-2). Researchers sampled students by using "stratified systematic sampling with predetermined sampling rates that varied by student stratum" (p. B-7).

During the first follow-up study in 2009, the enrollment list sample narrowed to those who had completed a bachelor's degree between July 1, 2007 and June 30, 2008, and had interviewed with NPSAS or had sufficient other data on file (Cataldi et al., 2014, pp. B-8-B-11). The second follow-up study in 2012 used the same sample set of eligible students (p. B-12).

For the B&B:08/12 study, participants were students who were interviewed who were eligible in the B&B:08/09 first follow-up study (Cataldi et al., 2014, p. B-12). The students also had to meet these requirements as quoted:

- be enrolled in any of the following: an academic program; at least one course for credit that could be applied toward fulfilling the requirements for an academic degree; or an occupational or vocational program that required at least 3 months or 300 clock hours of instruction to receive a degree, certificate, or other formal award;

- not be currently enrolled in high school; and

- not be enrolled solely in a General Educational Development (GED) or other high school completion program (Cominole, et al., 2015, p.6).

Data collected included eligibility, undergraduate education, post baccalaureate education/training, post baccalaureate employment, and student background (details in Table B1, *Full-scale interview core data elements, by section and topic: 2012*).

Additionally, to be eligible for participation, students must have attended NPSAS eligible institutions, which met the following criteria as quoted from Cataldi et al. (2014, p. B-4):

- been eligible to distribute Title IV funds;

- offered an educational program designed for persons who had completed at least a high school education;

- offered at least one academic, occupational, or vocational program of study lasting at least 3 months or 300 clock hours;

- offered courses that were open to persons other than the employees or members of the company or group (e.g., union) that administers the institution;

- been located in one of the 50 states, the District of Columbia, or Puerto Rico; and

- not been a U.S. service academy.

There were 1,940 institutions eligible (p. B-5). Of these institutions, 1,730 provided lists of students (Cominole et al., 2015, Table 2). See participation rates of eligible institutions in *NPSAS:08 sampled and eligible institutions and enrollment list participation rates, by institution characteristics: 2007-08,* Table B2.

The students who met these eligibility requirements of graduating in the 2007-2008 year from an eligible institution, and who had interviewed and/or whose institutions provided transcripts numbered 17,160 students (Cominole et al., 2015, p.iii). For example, students could still be eligible even if they did not complete or partially complete the interview in the first follow-up study if their information existed for the following as quoted from Cominole et al. (2015, pp.8-9):

- student type (undergraduate or graduate/first-professional);

- date of birth or age;

- sex; and

- at least 8 of the following 15 variables:

  o dependency status;

  o marital status;

  o any dependents;

  o income;

  o expected family contribution;

  o class level;

  o baccalaureate status

  o months enrolled;

  o tuition;

  o received federal aid;

  o received nonfederal aid;

  o student budget;

  o race/ethnicity; and

  o parent education.

Due to 20 students' deaths and other situations, the number of eligible students for the B&B:08/12 study was 17,110 (see Cominole et al., 2015, Table 11).

Variables. Using Perna's (2004) model, which "assumes that the decision to enroll in a post-baccalaureate program is a function of sex, race/ethnicity, expected costs and benefits, financial and social capital" (p. 493), one should select dependent and independent variables as follows. The dependent variable is the choice of enrollment in a master's degree program of library science as listed in Table 1. The independent variables

represent the areas of a) expected costs and benefits, b) financial and academic resources,

c) cultural capital, and d) social capital. See Tables 2-5.

Table 1

Dependent Variable – Choice of Graduate Library Science

Variable Description	B&B:08/12 Label	Definition
Enrollment in Post-Secondary Study – Field of Study, as of B&B: 12 Interview	B2HIEMAJ	Highest post-baccalaureate enrollment: Field of study, as of 2012

Note. The variable label and definition are from *PowerStats: B&B:2012, all variables by variable subject* by U. S. Department of Education, National Center for Education Statistics, 2016. Retrieved from
https://nces.ed.gov/datalab/powerstats/pdf/bb12_subject.pdf&ved=2ahUKEwiOzL29r5Ti
AhWCv1QKHQ9PAiMQFjABegQIBhAB&usg=AOvVaw1YfBZTkbv80s0BvUbLTZ0f

Expected costs and benefits – independent variables. Using the same assumptions as Perna (2004) and Douglas (2017), the direct cost of attending graduate school is not included in the analysis due to assuming graduate students' costs are the same due to participating in a national market rather than a state or local market (Perna, 2004, p. 493). The foregone earnings measurement is determined by grouping bachelor's degree field of study into lowest to highest quartiles based on expected level of earnings (Perna, 2004, p. 493). The four quartiles in Perna's study are lowest quartile (education, history, and psychology), second quartile (humanities, social sciences, public affairs and social services, and other), third quartile (business and management), and highest quartile (math and other sciences, health professions, and engineering) (p. 493).

Perna (2004), drawing upon human capital theory, also considered the time between high school graduation and the completion of a bachelor's degree to be relevant to persons' decisions on whether or not to enroll in post-baccalaureate education (p. 494). This is due to persons' calculations as to the earnings potential over time if they had less

time to recoup the costs of foregone earnings if it took longer to obtain the bachelor's

degree (p. 494). Marital status and parental status are also considerations in determining

the likelihood of further education (p. 494). See Table 2 for the relevant variables for

assessing expected costs and benefits.

Table 2

Independent Variables for Expected Costs and Benefits

Variable Description	B&B:08/12 Label	Definition
Bachelor's degree field of study	QF11FBAC	Transcript: NPSAS Bachelor's degree field of study: 11 categories
Time between high school and bachelor's degree completion	HS_BA	Months between high school graduation and 2007-08
Marital Status	B1MARR	Marital status in 2009
Status as Parent	B1DEPS	Any dependents in 2009

Note. The variable labels and definitions are from *PowerStats: B&B:2012, all variables by variable subject* by U. S. Department of Education, National Center for Education Statistics, 2016. Retrieved from https://nces.ed.gov/datalab/powerstats/pdf/bb12_subject.pdf&ved=2ahUKEwiOzL29r5Ti AhWCv1QKHQ9PAiMQFjABegQIBhAB&usg=AOvVaw1YfBZTkbv80s0BvUbLTZ0f

Financial and academic resources independent variables. Financial variables,

which may influence persons' decision-making when considering further education,

include the availability of income from parents and self, and the existence of prior

undergraduate debt (Perna, 2004, p. 494). Academic resources variables are those that

reflect students' prior academic success and may influence their assessment of the

likelihood of future academic success at the graduate level (p. 494). To measure this, one can use the variables of undergraduate grade-point average and ACT test scores. See Table 3 for the independent variables for financial and academic resources.

Table 3

Independent Variables for Financial and Academic Resources

Variable Description	B&B:08/12 Label	Definition
Income	CINCOME	Income (dependents' parents and independents) in 2006
Undergraduate GPA	GPA	Undergraduate GPA as of 2007-08
ACT score	TEACHDER	ACT composite score
Undergraduate loans total	B1BORAT	Cumulative loan amount borrowed for undergraduate through 2007-08

Note. The variable labels and definitions are from *PowerStats: B&B:2012, all variables by variable subject* by U. S. Department of Education, National Center for Education Statistics, 2016. Retrieved from https://nces.ed.gov/datalab/powerstats/pdf/bb12_subject.pdf&ved=2ahUKEwiOzL29r5Ti AhWCv1QKHQ9PAiMQFjABegQIBhAB&usg=AOvVaw1YfBZTkbv80s0BvUbLTZ0f

Cultural and social capital independent variables. Measures of cultural capital include parent's educational level as noted by Perna (2000, 2004), and Park and Hossler (2014). The highest educational level attained by either parent is a variable in the B&B:08/12 study, which one can use as a measure of cultural capital as well as the variable of whether or not the language at home was English. See Table 4. Perna (2004) and Douglas (2017) used these variables, so I used them in this study, though I note these items to reflect cultural capital may be Whiteness centered and are not as comprehensive as a broader definition of cultural capital as offered by Yosso for Communities of Color (2005).

Table 4

Independent Variables for Cultural Capital

Variable Description	B&B:08/12 Label	Definition
Level of parent's educational attainment	PAREDUC	Highest education level attained by either parent as of 2007-08
Primary language at home	PRIMLANG	English as primary language growing up

Note. The variable labels and definitions are from *PowerStats: B&B:2012, all variables by variable subject* by U. S. Department of Education, National Center for Education Statistics, 2016. Retrieved from https://nces.ed.gov/datalab/powerstats/pdf/bb12_subject.pdf&ved=2ahUKEwiOzL29r5Ti AhWCv1QKHQ9PAiMQFjABegQIBhAB&usg=AOvVaw1YfBZTkbv80s0BvUbLTZ0f

Social capital is meaningful to understanding the likelihood of students' choice of graduate education due to the influence of the building of social capital through prior relationships (Coleman, 1988). The undergraduate institution the student attended may promote graduate enrollment due to the influence of the social networks built during the undergraduate years (Perna, 2004, p. 497). In the case of the B&B:08/12 data set, variables that reflect attributes of the undergraduate institution the student attended include the institution's Carnegie Classification, and tuition and fees (which may reflect quality) (Perna, 2004, p. 497). Perna also considered location of the institution as a measure of social capital as a reflection of the breadth of the student's peer network as measured by whether or not the student's bachelor's degree was from the same state as the student's home state (p. 497). See Table 5 for these variables.

Table 5

Independent Variables for Social Capital

Variable Description	B&B:08/12 Label	Definition
Carnegie Classification of Undergraduate Institution	CC2000B	Carnegie code (modified 2000) with control for 2007-08 institution
Undergraduate tuition and fees	TUITION2	Tuition and fees paid in 2007-08
Attend as undergraduate in same state as legal resident	SAMESTAT	Attend institution in state of legal residence in 2007-08

Note. The variable labels and definitions are from *PowerStats: B&B:2012, all variables by variable subject* by U. S. Department of Education, National Center for Education Statistics, 2016. Retrieved from https://nces.ed.gov/datalab/powerstats/pdf/bb12_subject.pdf&ved=2ahUKEwiOzL29r5Ti AhWCv1QKHQ9PAiMQFjABegQIBhAB&usg=AOvVaw1YfBZTkbv80s0BvUbLTZ0f

Analytical Methods

PowerStats allows the user to select variables for creating tables and allows the user to select a dependent variable and multiple independent variables for analysis with linear regression, logistic regression, and with a correlation matrix (U. S. Department of Education, n.d., p. 5). For the purpose of my study, I used the Create Table section for creating tables with descriptive statistics and used Create Regression section for running logistic regression analysis.

In the PowerStats Create Table section, one may create tables for percentages of the population for selected variables, create tables for averages, medians, and percentages for selected variables, and create percentile tables for continuous variables. As an example, to create a table of means for variables for those who enrolled in library

science, first select the section for creating tables for averages, medians, and percentages. Then to select those who enrolled in library science, select the variable for highest post-baccalaureate enrollment: field of study (B2HIEMAJ) and drag it into the row entry. When filtering that variable, only select "Library science" as the field of study. For the columns of the table, drag and drop the desired variables such as months between high school graduation and 2007-08 (HS_BA), income (dependents' parents and independents) in 2006 (CINCOME), undergraduate GPA (GPA), ACT score (TEACHDER), and undergraduate debt total (B1BORAT). Click on Create Table to obtain the report.

In the logistic regression section, one selects Create Regression, then Logistic Regression. One drags the dependent variable into the top column and each independent variable into one of the rows. After creating a reference group when prompted to do so on the dependent variable, then one clicks on Create Regression to generate the report.

PowerStats provides results for standardized regression coefficients, which one can compare to determine the relative magnitudes of relationships of independent variables to the dependent variable. For example, the relationship of one independent variable may be many times stronger in its relationship to the dependent variable than some other independent variable in relationship to the dependent variable (U. S. Department of Education, n.d., p. 12).

Odds ratios results in PowerStats "represent the proportional change in the probability that the dependent variable equals one for each additional unit of the independent variable, all else equal" (U. S. Department of Education, n.d., p. 13). Odds ratios are useful because they show the likelihood of outcomes for different groups (Braver, Thoemmes, & Moser, 2010, pp. 957-958). Additionally, PowerStats reports the

log-odds, or natural logarithm of each odds ratio (U. S. Department of Education, n.d., p. 13). PowerStats reports confidence intervals, which is another approach to determine whether there is a significant relationship between variables (Braver et al., 2010, p. 958). Reported are the lower 95% and the upper 95% confidence interval around the odds ratio (U. S. Department of Education, n.d., p. 14).

PowerStats reports Student's *t*, which is defined as "the ratio of the logistic regression coefficient (reported under *Ln(Odds Ratio)*) divided by the standard error" (U. S. Department of Education, n.d., p. 15). One should compare the absolute value of *t* to a critical value, (1.96 for large samples), to interpret the statistical significance at the 95% confidence level of a particular independent variable (p. 15). P-value in PowerStats is defined as "the probability that a sample would have yielded a coefficient of this magnitude due to sampling error (also called sampling variation) if the true value of the coefficient were zero" (U. S. Department of Education, n.d., p. 16). Per suggestion in the PowerStats tutorial (p. 16) and based on tradition in social sciences research (Rosenthal, 2012, p. 231), I consider a p-value below .05 as statistically significant.

Methodology Specific to Research Questions. For research question one, I used the Create Table section in PowerStats to create a table of means for each of the continuous variables of undergraduate GPA, months between high school and bachelor's degree award, ACT composite score, income (dependents' and independents) in 2006, and cumulative loan amount borrowed for undergraduate study. These averages were for those enrolled in library science and those enrolled in other programs.

Additionally, for research question one, I used the Create Table section to create tables of percentages of those in library sciences and those in other programs by gender, race, race and gender, marital status, dependents or no dependents. For Carnegie code

institutions attended as an undergraduate, I grouped the seven categories provided in PowerStats into custom groupings of Public 2-year, Public and Private Doctoral-Research, Public and Private 4-year II, and others. I obtained percentages who attended each of these institution groups. I obtained a table of percentages for those who attended undergraduate institutions in the same state as legal residence and those who did not, the percentages at each highest level of education of either parent, and whether or not English was the primary language at home.

For research question two, I used the Create Regression section of PowerStats to create a logistic regression analysis using all these variables:

- Marital status in 2009 - married,

- Yes, dependents in 2009,

- Months between high school graduation and bachelor's degree award date,

- Income (dependents' parents and independents) in 2006,

- Undergraduate GPA as of 2007-2008,

- ACT composite score,

- Cumulative loan amount borrowed for undergraduate study through 2007-2008,

- Highest education level attained by either parent as of 2007-2008,

- English as a primary language growing up,

- Carnegie code of undergraduate institution attended,

- Tuition and fees paid in 2007-2008,

- Salary categories grouped by Bachelor's degree field of study,

- Race/ethnicity (Black, Hispanic, Other), and

- Gender - Male.

I used as the dependent variable, Highest post-baccalaureate enrollment: Field of study as of 2012, Library Science, with "All but Library Science" as the reference category.

For the salary grouping by major, I obtained the salaries all students were earning and sorted them by undergraduate majors using the "Transcript: NPSAS Bachelor's degree field of study: 11 categories" field. I then grouped them by lowest to highest salaries into four groups. The lowest quartile salaries were humanities, education, and other-law/library/human services/art/etc. Second quartile salaries were mathematics and science, general studies, social sciences, and other-manufacturing, etc. The third quartile salaries were in business. The highest quartile salaries were in computer and information sciences, engineering and engineering technology, and health care fields.

For research question three, I used the Create Table section to obtain tables of percentages of bachelor's degree recipients who enrolled in library science as of 2009 and as of 2012 by gender, by race/ethnicity, and by the combination of race/ethnicity. I used the Create Table section to obtain percentages enrolled in library science whose parent did or did not have a college degree by the library science students' gender, race/ethnicity, and the combination of race/ethnicity. I obtained the same reports for these variables:

- English (or not) as the primary language growing up,

- Married or not married in 2009 and in 2012,

- Dependents or not,

- Salary categories,

- Undergraduate institutions groupings using Carnegie code classifications, and

- Attendance at an undergraduate institution in the same state as legal residence.

For all the continuous variables of income, GPA, ACT score, and cumulative loans for undergraduate study, I used the Create Table section to obtain means and medians.

To obtain a logistic regression analysis by gender, I used the Create Regression section to run logistic regressions for females and for males by using these independent variables:

- Marital status in 2009 – married

- Yes, dependents

- Months between high school graduation and 2007-2008 bachelor's degree award date

- Income (dependents' parents and independents) in 2006

- Undergraduate GPA

- ACT composite score

- Cumulative loan amount borrowed for undergraduate through 2007-08

- Highest education level attained by either parent – high school

- Highest education level attained by either parent – some college

- English as a primary language growing up – No

- Carnegie code – Public 4-year II

- Tuition and fees paid in 2007-2008

- Salary quartiles – lowest quartile salaries

- Third quartile salaries

- Fourth quartile salaries

I used as the dependent variable, Highest post-baccalaureate enrollment: Field of study as of 2012, Library Science, with "All but Library Science" as the reference category.

Reliability and Validity

Reliability. Prior to implementation of the interview instrument, B&B:08/12 researchers held cognitive interviews with approximately 30 persons to obtain feedback on the questions (Cominole et al., 2015, pp. C-3-C-4). The researchers used a field test interview and reinterview to assess reliability of the survey instrument (pp. C-10-C-13). To analyze the responses they chose the measure of "temporal stability, or how constant responses remain over time" (p. C-10). The researchers found the instrument to be very reliable with percentage agreement between responses for the field test and the reinterview being 80% or higher for the majority of questions (p. C-13).

Validity. Validity refers to the concept of designing the research study such that one can consider the study's results accurate and generalizable (Mertler & Charles, 2008, p. 278). In quantitative research, researchers try to design the study to minimize threats to validity (Maxwell, 2005, p. 107). Internal validity threats are those actions, experiences, treatments, tests, and selection of participants or procedures in a study, which may contribute to the researcher being unable to draw correct conclusions from the data (Creswell, 2014, p. 174). Creswell lists several internal validity threats, which researchers should minimize, one of which is maturation. For example, researchers in the B&B:08/12 study minimized the maturation of subjects due to the participants being at the same level of educational attainment at the base year of 2007/2008 and followed up with them all in the year 2012. The researchers used a data collection technique of responsive design to minimize bias due to non-response (Cominole et al., 2015, p. iv). Researchers offered

small financial incentives and abbreviated interviews to participants determined to be likely to contribute to non-response bias (pp. 41-43).

For my study of this B&B:08/12 data, there is the risk of an internal validity threat due to sampling errors and nonsampling errors as a part of the B&B:08/12 study processes. Cataldi et al. (2014) caution analysts nonsampling errors can include "nonresponse, coding and data entry errors, misspecification of composite variables, and inaccurate imputations" (p. B-24). The B&B:08/12 researchers explained their processes for dealing with privacy issues (perturbation), missing values (imputations), and weighting adjustments (pp. B-13-B-16). Even though researchers used these measures to compensate for problems in the data, it is possible these could introduce inconsistencies. For example, to deal with variables with missing data, the B&B system filled the variables with an imputation process, filling the fields with data that should be representative of what one would expect for that variable though could be introducing error (p. B-14). PowerStats does compute standard errors of estimates, which one could examine to determine if the error was too large for the estimate to be representative of the population. PowerStats also has a feature in which it will not display an estimate for a variable if the system deems it "too small to produce a reliable estimate (fewer than 30 cases)" (pp. B-26-27).

External validity threats are those in which researchers improperly generalize the findings of the data to other persons with other characteristics, or to those in other settings, or to those in different time-periods, either prior or future, than those participants in the study (Creswell, 2014, p. 176). To prevent external validity threats in this study, I use caution in generalizing to other groups. Since the B&B:08/12 data was carefully gathered through the work of NCES which conducted this longitudinal study, the external

validity threats are minimized by the dataset representing students throughout the United States and by those researchers' attention to research design to minimize threats.

Limitations and Delimitations

Mertler and Charles (2008) define limitations as "[n]atural conditions that restrict the scope of a study and may affect its outcomes" (p. 363). As with using any secondary data set, one limitation is the National Center for Education Statistics designed the methodology for the longitudinal study for their use rather than for my individual study. Cataldi et al. (2014) stated the data set does allow "researchers to address questions regarding bachelor's degree recipients' … entrance into and progress through postbaccalaureate education…," (p.1) which does cover my study. Another limitation with using a secondary data set is that there is no way to follow up with any of the individual students to learn more about their graduate choice decision making.

The Baccalaureate and Beyond Longitudinal Study 2008/2012 (B&B:08/12) data set covers the timeframe of 2008 to 2012. A limitation is the findings may not be generalizable beyond that timeframe.

Since the library field is so predominately White and female, there is a limitation of the data set not being large enough, even with the weighting process, for it to provide as much information on males and on those identifying in other race/ethnicity categories.

Using Perna's model to analyze the data and using this data set allows one to examine only a few variables in the cultural and social capital areas. These are parent's educational attainment, primary language at home, type of undergraduate institution attended, undergraduate tuition and fees, and undergraduate attendance in the same state. One could view these variables as being Whiteness centered and not capturing other forms of capital as offered by Yosso (2005) for non-White communities. Wilson et al.

(2013) expressed concern about research undervaluing the cultural capital of African Americans as well.

A definition of delimitations as offered by Mertler and Charles (2008) is "restrictions that researchers impose in order to narrow the scope of the study" (p. 361). A delimitation in this longitudinal study is it only covers those who were undergraduates who graduated in 2007-2008 with follow-up data gathered in 2012. There could be students who entered library science graduate study who graduated at earlier or later years than 2007-2008. This data set does not include those persons and thus is not representative of all students in that timeframe. Although B&B:08/12 data could be considered dated, it is the most current B&B data set available as of 2019 and has value as a national data set comprised of a cohort tracked over time to allow for time to pass between bachelor's degree graduation and later enrollment in a graduate program. Enrollment in library science by members of this cohort between the years of 2012 and 2018 should be available in the 2018 follow-up data when that data set is released (U.S. Department of Education, National Center for Education Statistics, "Baccalaureate and Beyond Longitudinal Study (B&B): About B&B", n.d.).

Another delimitation is my choice to examine library science graduate students rather than a larger group of students. The data set and Perna's model could be better suited for analyzing graduate study choice by students more generally, or at least those for which there are larger numbers of students who chose a field of study.

Assumptions of the Study

Mertler and Charles (2008) define assumption as "something believed to be true, but not actually verified" (p. 360). One assumption is the variables really do represent factors involved in the graduate choice decision. Although the study is a test of Perna's

model, one cannot ask the individuals if those variables really did contribute to their decisions or if there were other important variables not examined.

Another assumption is the National Center for Education Statistics (NCES) took all relevant care to create an accurate data set and took all reasonable measures to account for missing data and for correctly weighting the data. NCES provided documentation on the methodology and numerous technical details but I cannot verify it.

Summary of Methodology

This chapter provided the purpose of my post-positivist, quantitative study, the research questions, and a description of the Baccalaureate and Beyond Longitudinal Study data set (B&B:08/12), which I used to answer the research questions. The chapter also described the design of the B&B:08/12 study, participants' eligibility, and the sampling design. My study used logistic regression to analyze the data set of those who chose to enroll in a master's program of library science. I provided descriptions of the variables examined and examples of how to create tables and create regressions with the software, PowerStats, the statistical analysis software provided at the National Center for Education Statistics website. Chapter IV provides the analyses and results, with Chapter V providing recommendations for actions through a critical theory lens.

Chapter IV: Analyses and Results

The purpose of this research was to find influences on the choice of library science graduate study in the areas of cultural and social capital, economic factors, and undergraduate study, by gender and race/ethnicity. I chose to use the Baccalaureate and Beyond Longitudinal Study data set (B&B:08/12) from the U.S. Department of Education, National Center for Education Statistics (NCES). This was due to this data set containing data on a national sample of students from undergraduate years through four years later when some had enrolled in graduate programs. In this chapter, I reviewed the findings relevant to each of three research questions.

Data Analysis

To obtain all statistics and odds ratio information from the B&B:08/12 data set, I used PowerStats Version 1.0 on the NCES website. To obtain descriptive statistics for each variable examined in the research, I used the Create Table section of PowerStats. To examine the influences of the variables on the decision to enroll in library science, I used the Create Regression section of the software, and then selected logistic regression. In depth methodology, I explained in Chapter III, but what follows is a description of how I analyzed the data in order to inform creating better, informative descriptive statistical and logistic regression reports. I also describe how I analyzed the logistic regression reports.

For research question one, I used the Create Table section to create a table of means for each of the continuous variables and percentage tables for other variables in order to determine the characteristics of those who enrolled in library science and those who enrolled in other graduate programs. In order to obtain better results, I created custom groupings for marital status, and for Carnegie Classification of undergraduate institutions, so there were fewer categories and thus larger percentages, to report.

To answer research question two, I ran a logistic regression using the dependent variable, *Highest post-baccalaureate enrollment: Field of study as of 2012*, *Library Science*, with all but library science as the reference category to determine the likelihood of the independent variables influencing students' decisions to enroll in library science. When running the logistic regression, I chose the following independent variables to be reference categories based on the percentages being high of library science students with those characteristics, as found in research question one. I used single, no dependents, parents with college degree, English as primary language – yes, Carnegie code institution – Doctoral-Research, second quartile salaries, White, and Female.

To be consistent with Perna (2004) and Douglas (2017), I created custom categories for four salary categories grouped by undergraduate majors. This reduced 11 categories of undergraduate majors to four as well as ranking them from lowest to highest.

I created custom categories for marital status, for Carnegie code classification institutions, and for parent's highest education level in order to provide better results when running the logistic regression. I determined these categories by examining the percentages found in question one and by examining the variable information pages in PowerStats. In each of these instances, this custom grouping process put certain values for each variable together into a group to increase the percentage of each group as compared to what existed for each separate value. Since there were so few persons from race/ethnicities other than White, I created custom groups of White, Black, Hispanic, and Other instead of using the numerous race/ethnic categories of the dataset.

To analyze the logistic regression report, I examined and reported findings based on the odds ratios with confidence intervals of lower and upper 95 percent. I also noted

each variable with p-value<0.05 as being a significant finding in relation to the influence of that variable on the likelihood of the students' choosing library science.

For research question three, I used the Create Table section to generate percentages reports of library science students by gender, race/ethnicity, and by the combination of gender and race/ethnicity, and to generate percentages of the various independent variables by those same gender and race categories. To generate means and medians for continuous variables by gender, race/ethnicity, and the combination of gender and race/ethnicity, I also used the Create Table section. I used the PowerStats system to generate a logistic regression analysis for females and an analysis for males to determine the likelihood that any of the variables influenced the decision by gender to enroll in library science. By examining percentages found in answering research question one, I decided to use the reference categories of single, no dependents, parents with college degree, English as primary language – yes, Carnegie code institution – Doctoral-Research, and second quartile salaries. As described in answering research question two, I used custom groupings for marital status, parent's highest educational level, Carnegie code classifications for undergraduate institutions attended, and salary categories.

To analyze the logistic regression reports, I examined and reported findings based on the odds ratios with confidence intervals of lower and upper 95 percent. I also noted each variable with p-value<0.05 as being a significant finding in relation to the influence of that variable on the likelihood of the students' choosing library science.

Research Questions

Research question 1. What are the economic, social, and cultural demographics of the 2007-2008 bachelor's degree recipients in the Baccalaureate and Beyond dataset who enrolled in a Master's of Library Science program by 2012?

Averages for continuous independent variables in the areas of expected costs and benefits and financial and academic resources are in Table 6. An independent variable for expected costs and benefits is time in months between high school graduation and the completion of a bachelor's degree as reported in 2007-2008. This time averaged 85.09 months for those enrolled in library science, which is longer than the average months (81.41) for those enrolled in other master's degrees. In the financial area of income in 2006, those enrolled in library science master's degrees had less family income ($62,501.47) than those enrolled in other master's programs ($77,384.91). The cumulative loan amount borrowed for their undergraduate programs through 2007-2008 was very similar at $15,751.95 for library science enrollees verses $15,916.71 for others.

Table 6

Means for Continuous Variables of Expected Costs, Financial, and Academic Resources for those Enrolled and Not Enrolled in Library Science

Variable	Library Science	Non-Library Science
Months between high school graduation and bachelor's degree completion 2007-2008	85.09	81.41
Income (dependents' parents and independents) in 2006	$62,501.47	$77,384.91
Cumulative loan amount borrowed for undergraduate through 2007-2008	$15,751.95	$15,916.71
Undergraduate GPA as of 2007-2008	3.40	3.33
ACT composite score	25.52	24.05

Note. Data from U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12), PowerStats.

In Table 7 are the percentage distributions for the characteristics of bachelor's degree recipients in 2007-2008 for those who had enrolled as of 2012 in a library sciences master's program and those who had enrolled in other graduate degree programs. This table contains categorical variables, generally using the default categories in the PowerStats system with the exception of grouping *married* and *separated* into *Married*, with all other categories as *Not married*; and grouping Carnegie public and private doctoral institutions together, and public and private four year II institutions together.

The characteristics shown in Table 7 indicate those who enrolled in library science programs differ from those enrolled in other graduate degree programs in most of

the variables. There were more female library science enrollees (74.93%) than enrolled in other programs (61.39%). More of the library science enrollees were White (92.79%) than enrolled in other programs (70.21%). In the combination of gender and race, there were more white females (67.72%) than enrolled in other master's (42.29%). There were similar percentages of white males (25.07%!) (! – interpret with caution) as enrolled in other master's (27.92%). There were so few enrollees from other race/ethnicity groups those numbers could not be displayed due to not meeting the reporting requirements of the PowerStats system. These findings are consistent with other statistics, which show the library field to be primarily White females.

Library science enrollees differed from those in other graduate programs in the expected costs and benefits variables of marital status and dependents. Fewer library science students were single (66.04%) than other enrollees (78.99%). More library science enrollees had no dependents (93.72%) than other enrollees (84.99%).

In the areas of cultural and social capital, more of the library science enrollees (53.11%) had attended a doctoral/research university for their undergraduate degrees than had other enrollees (38.51%). More library science enrollees (96.46%) grew up in homes where English was the primary language than other enrollees (89.68%).

Table 7

Percentages of Demographics Enrolled in Library Science and Non-Library Science Programs by 2012

Demographics	Library Science	Non-Library Science
Gender		
Male	25.07!	38.61
Female	74.93	61.39
Race/Ethnicity		
White	92.79	70.21
Black or African American	‡	10.03
Hispanic or Latino	‡	9.22
Asian	‡	6.44
American Indian or Alaska Native	‡	0.35!
Native Hawaiian or other Pacific Islander	‡	0.39
Other	‡	0.25!
More than one race	‡	3.12
Race/Ethnicity and Gender		
American Indian or Alaska Native male	‡	0.15!!
American Indian or Alaska Native female	‡	0.20!
Asian male	‡	3.08
Asian female	‡	3.36
Black or African American male	‡	2.32
Black or African American female	‡	7.71
Hispanic or Latino male	‡	3.66
Hispanic of Latino female	‡	5.56
Native Hawaiian or other Pacific Islander male	‡	0.10!!
Native Hawaiian or other Pacific Islander female	‡	0.28!
White male	25.07!	27.92
While female	67.72	42.29
Other male	‡	0.17!
Other female	‡	0.77!
Male of two or more races	‡	1.21
Female of two or more races	‡	1.92

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12). ! Interpret data with caution. Standard error (S.E.) > 30 percent of the estimate. !! Interpret data with caution. S.E. > 50 percent of the estimate. ‡ Reporting standards not met.

Table 7

Percentages of Demographics Enrolled in Library Science and Non-Library Science programs by 2012 -continued

Demographics	Library Science	Non-Library Science
Marital Status as of 2009		
Not married	66.04	78.99
Married	33.96!	21.01
Status as Parent as of 2009		
No Dependents	93.72	84.99
Yes, Dependent	‡	15.01
Carnegie Classification of Undergraduate Institution		
Public 2-year	‡	0.44!
Public & Private- Doctoral/research-extensive	53.11	38.51
Public & Private – 4-year II	41.04	48.41
Others	‡	4.79
Attend institution in same state of legal residence in 2007-2008		
Yes	85.02	81.14
No	14.99!	17.57
Highest education level attained by either parent as of 2007-2008		
Did not know either parent's education level	‡	1.36
Did not complete high school	‡	3.07
High school diploma or equivalent	13.49!	15.54
Vocational or technical training	‡	4.61
Less than 2 years of college	‡	6.85
Associate's degree	9.91!!	7.07
2 or more years of college but no degree	7.39!!	3.20
Bachelor's degree	25.52!	25.93
Master's degree	8.42!!	19.33
First-professional degree	11.19!	7.14
Doctoral degree or equivalent	‡	5.90
English Primary Language at Home		
No	‡	10.32
Yes	96.46	89.68

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12). ! Interpret data with caution. Standard error (S.E.) > 30 percent of the estimate. !! Interpret data with caution. S.E. > 50 percent of the estimate. ‡ Reporting standards not met.

Research question 2. Through applying the economic and sociological framework model of Perna (2006) to analysis of the Baccalaureate and Beyond dataset, what impact do the variables have on the likelihood of enrolling in a Master's of Library Science program?

To determine the impact of the variables on the likelihood of enrolling in a library science program, I ran a logistic regression analysis. See Table 8. In the areas of gender and race/ethnicity, among the library science enrollees, males were 29 percent less likely than females to enroll with the odds ratio of 0.71 and a 95% confidence interval of 0.05 to 11.03. In the area of race/ethnicity, the odds ratio for Blacks was 1.62, with a 95% confidence interval of 0.00 to 2053.45, for Hispanics was 0.58, with a 95% confidence interval of 0.00 to 347.25, and for all other races except Whites was 0.41, with a 95% confidence interval of 0.00 to 106.86. Due to the small percentages in the sample of any race/ethnicity other than White and due to these wide confidence intervals, one cannot rely on these odds ratios for predicting the likelihood of students of these races enrolling.

The variables in the area of expected costs and benefits were foregone salaries as grouped by undergraduate major, time between high school and bachelor's degree, marital status, and any dependents. To account for the influence of undergraduate major and the potential of foregone salaries upon enrollment in a library science graduate program, I grouped majors into four quartiles. Those in the lowest quartile of humanities and education had 150 percent more odds to enroll in library science with an odds ratio of 2.50 and 95% confidence interval of 0.25 to 24.80 than those in the second quartile of mathematics and sciences, general studies, and social sciences. Those in the two highest salary quartiles of business and of computer sciences, engineering, and health care had 100 percent less odds to enroll in library science with an odds ratio for each quartile of

0.00 with a 95% confidence interval of 0.00 to 0.05 and $p<0.05$ than those in the second quartile.

For the variable of months between high school graduation and 2007-2008 bachelor's degree award date, the odds ratio was 1.00 with a 95% confidence interval of 0.95 to 1.05, indicating that students at all levels of this variable had equal odds of enrolling or not in library science.

Married students had 194 percent more odds to enroll in library science than non-married with a 95% confidence interval of 0.48 to 17.82. Library science enrollees who had dependents had 100 percent less odds than those without dependents to enroll with a 95% confidence interval of 0.00 to 0.01 and $p<0.05$.

The financial and academic resources variables are income (dependents' parents and independents) in 2006, undergraduate GPA, ACT composite score, and cumulative federal loan amount borrowed as of 2007-2008 for undergraduate studies. For the variable of undergraduate GPA, all levels had equal odds to enroll in library science (odds ratio 1.00, 95% confidence interval of 0.99 to 1.02). The ACT composite score odds ratio of 1.08 indicates that as the ACT scores rise, students had 8 percent more odds to enroll in library science with 95% confidence interval of 0.97 to 1.20. Income and cumulative federal loan amounts had odds ratios of 1.00 with 95% confidence intervals of 1.00 to 1.00 indicating that those with all levels of income and federal loan amounts had equal odds to enroll in library science.

The highest education level attained by either parent as of 2007-2008 and English as the primary language growing up are the variables examined for cultural capital. Students whose parent achieved some college but not a degree had 16 percent less odds to enroll in library science than those with parents with a college degree with a 95%

confidence interval of 0.02 to 30.49. Students who had parent's highest education level of high school had 62 percent less odds to enroll than those with a college degree were to enroll in library science with a 95% confidence interval of 0.01 to 21.47. Those who grew up in a home without English as the primary language had 99 percent less odds to enroll than those who grew up with English as the primary language, with a 95% confidence interval of 0.00 to 0.06, p<0.05.

The variables for social capital are the Carnegie Classification of the undergraduate institution, the undergraduate tuition and fees paid as of 2007-08, and attendance at an institution in the same state as legal residence. The variable for attendance in the same state was one I could not use in the logistic regression due to a collinearity error. Students who earned bachelor's degrees at Public and Private 4-year II institutions had 62 percent less odds to enroll in a library science program than those who graduated from Public and Private Doctoral/Research institutions with a 95% confidence interval of 0.12 to 1.24. Students at all levels of tuition and fees at the undergraduate level had equal odds to enroll in a library science program, with odds ratio 1.00, 95% confidence interval of 1.00 to 1.00.

Table 8

Odds Ratio Results for Library Science Enrollment

Variables	Odds Ratio	Lower 95%	Upper 95%	t	p-value	b
Intercept	0.00	0.00	2.02	-1.77	0.078	-6.29
Marital status in 2009						
Married	2.94	0.48	17.89	1.18	0.241	1.08
Any dependents in 2009						
*Yes, dependents	0.00	0.00	0.01	-8.48	0.000	-6.00
Months between high school graduation and 2007-08 bachelor's degree award date	1.00	0.95	1.05	-0.18	0.857	0.00
Income (dependents' parents and independents) in 2006	1.00	1.00	1.00	-0.88	0.380	0.00
Undergraduate GPA as of 2007-08	1.00	0.99	1.02	0.54	0.591	0.00
ACT composite score	1.08	0.97	1.20	1.41	0.160	0.08
Cumulative loan amount borrowed for undergraduate through 2007-08	1.00	1.00	1.00	-1.01	0.312	0.00
Highest education level attained by either parent as of 2007-08						
High school	0.38	0.01	21.64	-0.48	0.634	-0.98
Some college	0.84	0.02	30.49	-0.09	0.925	-0.17

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12).
*$p < .05$.

Table 8

Odds Ratio Results for Library Science Enrollment - Continued

Variables	Odds Ratio	Lower 95%	Upper 95%	t	p-value	b
English as primary language growing up						
*No	0.01	0.00	0.06	-5.01	0.000	-4.63
Carnegie code for 2007-08 institution Public & Private						
4-year II	0.38	0.12	1.24	-1.61	0.110	-0.97
Others	0.28	0.00	55.52	-0.48	0.634	-1.28
Tuition and fees paid in 2007-08	1.00	1.00	1.00	-1.24	0.216	0.00
Salary Categories by Undergraduate Major						
Lowest Quartile	2.50	0.25	24.80	0.79	0.431	0.92
*3rd Quartile	0.00	0.00	0.05	-4.65	0.000	-5.36
*Highest Quartile	0.00	0.00	0.05	-4.72	0.000	-5.32
Race/ethnicity						
Black	1.62	0.00	2053.45	0.13	0.894	0.48
Hispanic	0.58	0.00	347.25	-0.17	0.869	-0.54
Other	0.41	0.00	106.86	-0.32	0.752	-0.89
Gender						
Male	0.71	0.05	11.03	-0.25	0.803	-0.35

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12).
*$p < .05$.

Research question 3. For those who enrolled in a Master's of Library Science

program, what are the associations between cultural and social capital, economic factors,

gender, and race/ethnicity?

To explore these associations, I obtained descriptive statistics and logistic

regression analyses from the PowerStats system using the variables of cultural capital,

social capital, and economic factors as found in relation to gender and race/ethnicity.

The percentage of the 2007-2008 bachelor's degree recipients in the weighted

sample of library science students by gender, race/ethnicity, and the combination of

gender and race/ethnicity are in Tables 9 through 11. Table 9 shows the distribution by

gender, with 74.9% as female as of the data collection in 2012.

Table 9

Percentages of 2007-2008 Bachelor's Degree Recipients Enrolled in Library Science by Gender

Estimates (%)	Male (%)	Female (%)
Enrollment as of 2009	‡	‡
Enrollment as of 2012	25.1!	74.9

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12). ! Interpret data with caution. Standard error (S.E.) > 30 percent of the estimate. ‡ Reporting standards not met.

For the distribution by Race/Ethnicity (Table 10) as of the 2012 collection of data,

92.8% were White, with an insufficient percentage to report in all other race/ethnic

groups.

Table 10

Percentages of 2007-2008 Bachelor's Degree Recipients Enrolled in Library Science by Race/Ethnicity

Race/Ethnicity	Enrollment 2009	Enrollment 2012
White	‡	92.8
Black or African American	‡	‡
Hispanic or Latino	‡	‡
Other	‡	‡

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12).
‡ Reporting standards not met.

Distribution of 2007-2008 bachelor's degree recipients who enrolled in Library Science by the combination of race/ethnicity and gender (Table 11) shows insufficient numbers to report in 2009. By 2012, the largest percentage was white female at 67.7%. The next two largest groups were white males and all other females, reporting with caution due to insufficient numbers.

Table 11

Percentages of 2007-2008 Bachelor's Degree Recipients enrolled in Library Science by Race/Ethnicity and Gender

Race/Ethnicity & Gender	Enrollment 2009	Enrollment 2012
White male	‡	25.1!
White female	‡	67.7
All other males	‡	‡
All other females	‡	7.2!!

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12). ! Interpret data with caution. Standard error (S.E.) > 30 percent of the estimate. !! Interpret data with caution. S.E. > 50 percent of the estimate. ‡ Reporting standards not met.

In the weighted sample, 61.4% of females had a parent who obtained a college degree and 38.6% of females did not have a parent who obtained a college degree as shown in Table 12. Whites also had many parents with college degrees at 65.2% with 34.8% not having a college degree.

Table 12

*Percentages of 2007-2008 Bachelor's Degree Recipients Enrolled in Library Science by
Highest Level of Education Attained by Either Parent as of 2007-08*

Demographics	College degree (%)	No College Degree (%)
Gender		
Male	‡	‡
Female	61.4	38.6
Race/Ethnicity		
White	65.2	34.8
Black or African American	‡	‡
Hispanic or Latino	‡	‡
Other	‡	‡
Race/Ethnicity and Gender		
Other male	‡	‡
Other female	‡	‡
Black or African American male	‡	‡
Black or African American female	‡	‡
Hispanic or Latino male	‡	‡
Hispanic or Latino female	‡	‡
White male	‡	‡
White female	‡	‡

Note. From U.S. Department of Education, National Center for Education Statistics,
2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12).
‡ Reporting standards not met.

Females had the highest percentage of English as the primary language growing

up at 95.3% as shown in Table 13. Whites had the highest percentage of English as the

primary language growing up at 96.3%.

Table 13

Percentages of 2007-2008 Bachelor's Degree Recipients Enrolled in Library Science by English as Primary Language Growing Up

Demographics	English not Primary Language (%)	English as Primary Language (%)
Gender		
Male	‡	‡
Female	‡	95.3
Race/Ethnicity		
White	‡	96.3
Black or African American	‡	‡
Hispanic or Latino	‡	‡
Other	‡	‡
Race/Ethnicity and Gender		
Other male	‡	‡
Other female	‡	‡
Black or African American male	‡	‡
Black or African American female	‡	‡
Hispanic or Latino male	‡	‡
Hispanic or Latino female	‡	‡
White male	‡	‡
White female	‡	‡

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12).
‡ Reporting standards not met.

Financial resources variables include income (dependents' parents and independents) in 2006 and cumulative federal loan amounts the students borrowed for their undergraduate education as of 2007-2008. The averages and medians for these continuous variables are in Table 14 for the students with enrollment in a library science

program as of 2012. The table provides breakdown by gender, race/ethnicity, and the combination of race/ethnicity and gender. Since the population is so heavily female and White, those were the only categories of variables meeting the reporting standards. One can compare the female income average of $69,262.17 to the overall total for library science students of $62,501.47 and conclude that females and/or their parents' had higher incomes than males since the total for all library science students was less. The same situation holds for median income, which was $60,536.00 for females and $53,491.00 for all library science students. For cumulative loan amounts, there is little difference in the average for all of $15,751.95 and the average for females of $15,797.18. By race, Whites had an average income of $62,565.09 close to the average for all of $62,501.47. The cumulative loan amount of $15,670.95 was also similar to the average for all of $15,751.95.

Academic resources variables are the undergraduate GPA as of 2007-2008 and the ACT composite score. The GPA for females of 3.49 was higher than the total GPA of 3.40. To result in a drop from females' average GPA of 3.49 to the all total at 3.40, the male's average would have been lower. There was little difference in ACT composite of 25.7 for females and the 25.5 of the total.

Table 14

Means and Medians for Income, Undergraduate GPA, ACT composite score, and Cumulative Amount in Federal Loans at Undergraduate Level by Gender and Race

Gender & Race	Income (Avg.)	Income (Median)	Undergraduate GPA (Avg.)	Undergraduate GPA (Median)	ACT composite score (Avg.)	ACT composite score (Median)	Cumulative loan amount borrowed for undergraduate (Avg.)	Cumulative loan amount borrowed for undergraduate (Median)
Total	62,501.47	53,491.00	3.40	3.40	25.5	26.0	15,751.95	13,625.00
Gender								
Male	‡	‡	‡	‡	‡	‡	‡	‡
Female	69,262.17	60,536.00	3.49	3.58	‡	26.0	15,797.18	11.625.00!
Race/ethnicity								
White	62,565.09	57,443.00	3.41	3.43	25.7	26.0	15,670.95	13,625.00
Black or African American	‡	‡	‡	‡	‡	‡	‡	‡
Hispanic or Latino	‡	‡	‡	‡	‡	‡	‡	‡
Other	‡	‡	‡	‡	‡	‡	‡	‡
Race/ethnicity and gender								
Black or African American male	‡	‡	‡	‡	‡	‡	‡	‡
Black or African American female	‡	‡	‡	‡	‡	‡	‡	‡
Hispanic or Latino male	‡	‡	‡	‡	‡	‡	‡	‡
Hispanic or Latino female	‡	‡	‡	‡	‡	‡	‡	‡
White male	‡	‡	‡	‡	‡	‡	‡	‡
White female	‡	‡	‡	‡	‡	‡	‡	‡
Other male	‡	‡	‡	‡	‡	‡	‡	‡
Other female	‡	‡	‡	‡	‡	‡	‡	‡

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12). ! Interpret data with caution. Standard error (S.E.) > 30 percent of the estimate. ‡ Reporting standards not met.

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Expected costs and benefits variables include marital status, parental status, salary categories grouped into tiers by major, and time in months between high school graduation and bachelor's degree completion in 2007-2008. Tables 15 through 18 contain the percentage distributions for marital status, parental status, and salary categories by gender, race/ethnicity, and the combination of race/ethnicity and gender.

Table 15 shows that the highest percentage of those who enrolled in library science were females and were not married (78%) as of 2009. Among races and ethnicities, the largest group was White (63%). These statistics compared to those in Table 16 for those in Library Science as of 2012 show that many students married in those three years. The percentage of overall library science students not married declined from 66.5% in 2009 to 42.4% in 2012. For females the decline in not married was from 78.0% to 49.3% and Whites from 63.7% to 40.9%. This is interesting to note, though I will use the marital status in 2009 variable in the later odds ratio regressions by gender to be consistent with Perna (2004) who used the variable of marital status at the beginning of the date range of the longitudinal study.

Table 15

Marital status in 2009 of 2007-2008 Baccalaureate Graduates Enrolled in Library Science as of 2012, Gender, Race/Ethnicity, and Race/Ethnicity & Gender

Gender & Race/ethnicity	Not Married as of 2009	Married as of 2009
Total	66.5	33.5!
Gender		
Male	‡	‡
Female	78.0	22.0!
Race/ethnicity		
White	63.7	36.3
Black or African American	‡	‡
Hispanic or Latino	‡	‡
Other	‡	‡
Race/ethnicity and Gender		
White male	‡	‡
White female	‡	‡
Black or African American male	‡	‡
Black or African American female	‡	‡
Hispanic or Latino male	‡	‡
Hispanic or Latino female	‡	‡
Other male	‡	‡
Other female	‡	‡

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12). ! Interpret data with caution. Standard error (S.E.) > 30 percent of the estimate. ‡ Reporting standards not met.

Table 16

Marital status in 2012 of 2007-2008 Baccalaureate Graduates Enrolled in Library
Science as of 2012, Gender, Race/Ethnicity, and Race/Ethnicity & Gender

Gender & Race/ethnicity	Not Married as of 2012	Married as of 2012
Total	42.4	57.6
Gender		
Male	‡	‡
Female	49.3	50.7
Race/ethnicity		
White	40.9	59.1
Black or African American	‡	‡
Hispanic or Latino	‡	‡
Other	‡	‡
Race/ethnicity and Gender		
White male	‡	‡
White female	‡	‡
Black or African American male	‡	‡
Black or African American female	‡	‡
Hispanic or Latino male	‡	‡
Hispanic or Latino female	‡	‡
Other male	‡	‡
Other female	‡	‡

Note. From U.S. Department of Education, National Center for Education Statistics,
2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12).
‡ Reporting standards not met.

As shown in Table 17, the largest percentages of library science students were not

living with dependents (93%), were female (94.6%), and White (92.5%).

Table 17

Percentages of 2007-2008 Baccalaureate Graduates Enrolled in Library Science as of 2012, No Dependents and Living with Dependents in 2009

Gender & Race/ethnicity	Does not live with dependents	Yes, live with dependents
Total	93.1	‡
Gender		
Male	‡	‡
Female	94.6	‡
Race/ethnicity		
White	92.5	‡
Black or African American	‡	‡
Hispanic or Latino	‡	‡
Other	‡	‡
Race/ethnicity and Gender		
White male	‡	‡
White female	‡	‡
Black or African American male	‡	‡
Black or African American female	‡	‡
Hispanic or Latino male	‡	‡
Hispanic or Latino female	‡	‡
Other male	‡	‡
Other female	‡	‡

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12).
‡ Reporting standards not met.

The percentage distribution of library science program enrollees as of 2012

grouped by highest to lowest salary quartiles is in Table 18. The highest percentage of the

total students (67.7%) had majored in the subjects grouped into the lowest quartile of salaries. Those majors include humanities, education, and other-law/library/human service/art etc. The second highest percentage (31.2%!) of total students had majored in the second lowest quartile of majors of mathematics and science, general studies, social sciences, and "other manufacturing/per service/protection etc." This same distribution held true for Whites majoring in these subject areas at very similar percentages for the second quartile (32.4%!) and lowest quartile (66.6%).

Table 18

Percentages of 2007-2008 Baccalaureate Graduates Enrolled in Library Science as of 2012, grouped by Highest to Lowest Salary Quartiles

Gender & Race/ethnicity	Highest Quartile	3rd Highest Quartile	2nd Lowest Quartile	Lowest Quartile
Total	‡	‡	31.2!	67.7
Gender				
Male	‡	‡	‡	‡
Female	‡	‡	‡	‡
Race/ethnicity				
White	‡	‡	32.4!	66.6
Black or African American	‡	‡	‡	‡
Hispanic or Latino	‡	‡	‡	‡
Other	‡	‡	‡	‡
Race/ethnicity & Gender				
White male	‡	‡	‡	‡
White female	‡	‡	‡	‡
Black or African American male	‡	‡	‡	‡
Black or African American female	‡	‡	‡	‡
Hispanic or Latino male	‡	‡	‡	‡
Hispanic or Latino female	‡	‡	‡	‡
Other male	‡	‡	‡	‡
Other female	‡	‡	‡	‡

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12). ! Interpret data with caution. Standard error (S.E.) > 30 percent of the estimate. ‡ Reporting standards not met.

Social capital variables included the Carnegie code (modified 2000) for the classification of the institutions that library science students attended as undergraduates, whether the undergraduate student attended an institution in the same state as legal

residence, and tuition and fees paid as an undergraduate in 2007-2008. See Table 19 for

the percentage distribution by gender, race/ethnicity, and the combination of

race/ethnicity and gender for each Carnegie group of institutions. For the total population

of library science students, 52.3% had attended public and private doctoral/research

institutions, and 42.4% had attended public and private 4-year II institutions. An even

higher percentage of White students (55.3%) enrolled as an undergraduate in the

doctoral/research institutions.

Table 19

Percentages of 2007-2008 Baccalaureate Graduates Enrolled in Library Science as of 2012, Carnegie Code Institutions of Undergraduates

Gender & Race/ethnicity	Public 2-year	Public & Private Doctoral-Research	Public & Private 4-Year II	Other
Total	‡	52.3	42.4	‡
Gender				
Male	‡	‡	‡	‡
Female	‡	43.2	49.8	‡
Race/ethnicity				
White	‡	55.3	39.2	‡
Black or African American	‡	‡	‡	‡
Hispanic or Latino	‡	‡	‡	‡
Other	‡	‡	‡	‡
Race/ethnicity & Gender				
White male	‡	‡	‡	‡
White female	‡	‡	‡	‡
Black or African American male	‡	‡	‡	‡
Black or African American female	‡	‡	‡	‡
Hispanic or Latino male	‡	‡	‡	‡
Hispanic or Latino female	‡	‡	‡	‡
Other male	‡	‡	‡	‡
Other female	‡	‡	‡	‡

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12).
‡ Reporting standards not met.

Another social capital variable is whether the student enrolled at an institution in the same state as legal residence when an undergraduate. As shown in Table 20, 79.4% of

females enrolled in the same state and 86.4% of Whites enrolled in the same state. Since the overall total for students in library science showed 85.0% enrolled in the same state, then the percentages of males would have been higher than females who enrolled in some other state though the number of males did not meet the number required for reporting requirements.

Table 20

Percentage of 2007-2008 Baccalaureate Graduates Enrolled in Library Science as of 2012, Undergraduate Attendance in Same State, Not in Same State

Gender & Race/ethnicity	Undergraduate Attendance in Same State	Undergraduate Attendance not in Same State
Total	85.0	15.0!
Gender		
Male	‡	‡
Female	79.4	20.6!
Race/ethnicity		
White	86.4	13.6!
Black or African American	‡	‡
Hispanic or Latino	‡	‡
Other	‡	‡
Race/ethnicity & Gender		
White male	‡	‡
White female	‡	‡
Black or African American male	‡	‡
Black or African American female	‡	‡
Hispanic or Latino male	‡	‡
Hispanic or Latino female	‡	‡
Other male	‡	‡
Other female	‡	‡

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12). ! Interpret data with caution. Standard error (S.E.) > 30 percent of the estimate. ‡ Reporting standards not met.

To examine the influence of the independent variables on the likelihood of

females choosing to enroll in library science, I ran a logistic regression filtering for

females. I could not use the variable of race in this logistic regression due to collinearity errors. See Table 21 for the odds ratio results.

Expected costs and benefits variables were marital status in 2009, parental status in 2009, months between high school graduation and bachelor's degree graduation, and salaries grouped by majors from highest to lowest quartiles. Females who were married in 2009 had 30 percent more odds to enroll in library science than those not married with a 95% confidence interval of 0.10 to 16.94. Females who were living with dependents in 2009 had 100 percent less odds to enroll than females without dependents with a 95% confidence interval of 0.00 to 0.00, $p<.05$. The odds ratio for the months between high school graduation and the completion of a bachelor's degree in 2007-2008 was 0.98, showing a two percent less odds of enrollment depending upon the number of months. Using the second quartile as reference, there were 124 percent more odds that students in the lowest quartile of salaries based on majors would enroll in library science. It was extremely unlikely that those in who majored in business and in other higher paid areas of computer and information science and engineering would enroll in library science, 100 percent less odds, with a 95% confidence interval of 0.00 to 0.29, $p<.05$.

Financial and academic resources variables were income (dependent's parents and independents) in 2006, undergraduate GPA, ACT composite score, and the cumulative federal loans amount borrowed for undergraduate education through 2007-2008. Income and loan amounts had odds ratios of 1.00 with 95% confidence intervals of 1.00 to 1.00 indicating that females had equal odds to enroll regardless of these amounts. The odds ratio for undergraduate GPA was 1.00 indicating changes in the GPA did not change the likelihood of enrollment. The odds ratio for ACT composite score did show 10 percent

greater odds of enrollment as the ACT score increased, with a 95% confidence interval of 0.95 to 1.28.

Cultural capital variables included the highest education level achieved by either parent and whether English was the primary language in the home growing up. Using the parent having a college degree as a reference, female students whose parents had only completed high school had 46 percent less odds to enroll with a 95% confidence interval of 0.01 to 51.56. Those whose parent had some college but not a degree were 29 percent less likely to enroll with a 95% confidence interval of 0.01 to 88.45. Using English in the home as a reference, female students who did not have English as the first language in the home had 99 percent less odds to enroll with a 95% confidence interval of 0.00 to 0.02, $p<.05$.

Social capital variables included the Carnegie code classifications for institutions in which students enrolled as undergraduates and the variable of tuition and fees paid for undergraduate education in 2007-2008. Using doctoral/research institutions as a reference, female students who attended private and public 4-year II institutions, as an undergraduate, had 24 percent less odds to enroll with a 95% confidence interval of 0.16 to 3.67. Tuition and fees paid in 2007-2008 had an odds ratio of 1.00 with a 95% confidence interval of 1.00 to 1.00, indicating female students who had all levels of tuition and fees had equal odds of enrolling.

Table 21

Odds Ratio Results for Library Science Enrollment by Females

Variables	Odds Ratio	Lower 95%	Upper 95%	t	p-value	b
Intercept	0.00	0.00	179.86	-1.06	0.289	-6.06
Marital status in 2009						
Married	1.30	0.10	16.94	0.20	0.842	0.26
Any dependents in 2009						
*Yes, dependents	0.00	0.00	0.01	-10.02	0.000	-5.69
Months between high school graduation and 2007-08 bachelor's degree award date	0.98	0.94	1.01	-1.30	0.194	-0.02
Income (dependents' parents and independents) in 2006	1.00	1.00	1.00	-0.78	0.439	0.00
Undergraduate GPA as of 2007-08	1.00	0.99	1.02	0.53	0.596	0.00
ACT composite score	1.10	0.95	1.28	1.28	0.201	0.10
Cumulative loan amount borrowed for undergraduate through 2007-08	1.00	1.00	1.00	-0.70	0.482	0.00
Highest education level attained by either parent as of 2007-08						
High school	0.54	0.01	51.56	-0.26	0.792	-0.61
Some college	0.71	0.01	88.45	-0.14	0.888	-0.34

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12
Baccalaureate and Beyond Longitudinal Study (B&B:08/12).
*p < .05.

Table 21

Odds Ratio Results for Library Science Enrollment by Females- Continued

Variables	Odds Ratio	Lower 95%	Upper 95%	t	p-value	b
English as primary language growing up						
*No	0.01	0.00	0.02	-7.17	0.000	-5.25
Carnegie code for 2007-08 institution Public & Private						
4-year II	0.76	0.16	3.67	-0.35	0.727	-0.28
Others	0.79	0.00	298.63	-0.08	0.937	-0.24
Tuition and fees paid in 2007-08	1.00	1.00	1.00	-1.20	0.231	0.00
Salary Categories by Undergraduate Major						
Lowest Quartile	2.24	0.03	172.26	0.37	0.715	0.81
*3rd Quartile	0.00	0.00	0.29	-2.54	0.012	-5.53
*Highest Quartile	0.00	0.00	0.29	-2.56	0.011	-5.43

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12).
*p < .05.

To examine the influence of the independent variables on the likelihood of males choosing to enroll in library science, I ran a logistic regression filtering for males. See Table 22 for the odds ratio results. I could not use the variable of race in this logistic regression due to collinearity errors.

Expected costs and benefits variables were marital status in 2009, parental status in 2009, months between high school graduation and bachelor's degree graduation, and salary categories grouped by majors from highest to lowest quartiles. The population size of males by marital status was too small and the large confidence interval did not allow for any conclusions about likelihood of enrollment. Those with dependents had 100

percent less odds to enroll than those without dependents were to enroll, with a 95% confidence interval of 0.00 to 14.25. Months between high school graduation and the 2007-2008 bachelor's degree award date made little difference in the likelihood of enrollment, with an odds ratio of 0.99 and 95% confidence interval of 0.79 to 1.24. The foregone salaries upon enrollment did make a large difference in the likelihood of enrollment. Those in the 3rd highest salary group had 99 percent less odds to enroll, with a 95% confidence interval of 0.00 to 35.34 and those in the highest category of salaries having 99 percent less odds to enroll with a 95% confidence interval of 0.00 to 19.46.

Financial and academic resources variables were income (dependent's parents and independents) in 2006, undergraduate GPA, ACT composite score, and the cumulative federal loans amount borrowed for undergraduate education through 2007-2008. All levels of males' undergraduate GPA had equal odds to enroll with a 95% confidence interval of 0.89 to 1.11. The ACT score made little difference to the likelihood of enrollment with an odds ratio of 0.99 with a 95% confidence interval of 0.58 to 1.71. The income and undergraduate loan amounts made no difference to the likelihood of male enrollment. Both had odds ratios of 1.00, with a 95% confidence interval of 1.00 to 1.00.

Cultural capital variables include the highest education level achieved by either parent and whether English was the primary language in the home growing up. Males with parents whose highest level of education was a high school degree had 100 percent less odds to enroll in library science than those who had a college degree. Those who did not have English as the primary language in the home growing up had 99 percent less odds to enroll with a 95% confidence interval of 0.00 to 12.20.

Social capital variables include the Carnegie code classifications for institutions in which students enrolled as undergraduates and the variable of tuition and fees paid for

undergraduate education in 2007-2008. Males who attended public and private 4-year II institutions as undergraduates had 100 percent less odds to enroll in library science with a 95% confidence interval of 0.00 to 2.93 than those who graduated from doctoral/research institutions. Males at all levels of tuition and fees paid during 2007-2008 had equal odds of enrolling in library science, with an odds ratio of 1.0, 95% confidence interval of 1.00 to 1.00.

Table 22

Odds Ratio Results for Library Science Enrollment by Males

Variables	Odds Ratio	Lower 95%	Upper 95%	t	p-value	b
Intercept	0.08	0.00	206866431503070.00	-0.14	0.887	-2.56
Marital status in 2009						
Married	20.30	0.00	199667.54	0.65	0.519	3.01
Any dependents in 2009						
Yes, dependents	0.00	0.00	14.25	-1.40	0.163	-6.49
Months between high school graduation and 2007-08 bachelor's degree award date	0.99	0.79	1.24	-0.08	0.934	-0.01
Income (dependents' parents and independents) in 2006	1.00	1.00	1.00	-0.04	0.970	0.00
Undergraduate GPA as of 2007-08	1.00	0.89	1.11	-0.08	0.936	0.00
ACT composite score	0.99	0.58	1.71	-0.02	0.983	-0.01
Cumulative loan amount borrowed for undergraduate through 2007-08	1.00	1.00	1.00	-0.27	0.788	0.00

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12).
*p < .05.

Table 22

Odds Ratio Results for Library Science Enrollment by Males- Continued

Variables	Odds Ratio	Lower 95%	Upper 95%	t	p-value	b
Highest education level attained by either parent as of 2007-08						
High school	0.00	0.00	5.66	-1.49	0.138	-5.33
Some college	1.03	0.00	8424.16	0.01	0.995	0.03
English as primary language growing up						
No	0.01	0.00	12.20	-1.33	0.186	-5.16
Carnegie code for 2007-08 institution Public & Private						
4-year II	0.00	0.00	2.93	-1.67	0.096	-6.02
Others	0.00	0.00	13.88	-1.36	0.174	-5.91
Tuition and fees paid in 2007-08	1.00	1.00	1.00	-0.30	0.763	0.00
Salary Categories by Undergraduate Major						
Lowest Quartile	2.90	0.00	194090.19	0.19	0.850	1.07
3rd Quartile	0.01	0.00	35.34	-1.11	0.270	-4.55
Highest Quartile	0.01	0.00	19.46	-1.24	0.215	-5.07

Note. From U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12).
*p < .05.

Summary of Results

Characteristics of those who enrolled in library science as opposed to other graduate programs include lower average income for the student and/or parents; and a higher percentage female, White, married, no dependents, and English as primary language than other graduate students. More library science students had attended doctoral-research universities as undergraduates than other graduate students.

In examining the logistic regression for the impact of the variables on library science enrollment, I found that males had less odds of enrolling. Students with undergraduate majors in business, computer sciences, engineering, and health care also had much less odds of enrolling.

Students without a parent who had a college degree had less odds to enroll in library science. Those who grew up in a home without English as the primary language had less odds to enroll. Students who attended public or private 4-year II Carnegie classification institutions as undergraduates had less odds to enroll than those who had attended doctoral/research universities.

Findings of logistic regression odds ratios for females were significant for the characteristics of no dependents and of English as primary language influencing the likelihood of enrollment. The findings were also significant for the variables of the third highest and the highest salary categories for females having less odds to enroll in library science. Odds ratios were similar for both females and males for most variables.

Chapter V: Conclusions and Recommendations

This study examined data from the Baccalaureate and Beyond Longitudinal Study (B&B:08/12) with Perna's (2006) conceptual model of college choice. This study used Perna's model of the influences of economic, social, and cultural factors in combination with gender and race to predict the enrollment in library science. The study also examined the issue of the lack of diversity in the enrollment in library science through a social justice framework, gathering relevant social justice literature as well as college choice literature.

The process of the literature review combined with the research on the data provided greater knowledge of the factors involved in the choice of students' graduate study. This chapter will state the conclusions of the study, implications for practice and research, and recommendations for further research.

Discussion and Conclusions of the Study

Economic factors play a role in the choice of library science. Library science students prior to enrollment in library science had lower incomes than those in other graduate programs. Among those who chose library science, most were from the lower salary tiers who had studied the undergraduate majors of education, humanities, and social sciences and rarely from the higher paid fields of business, computer science, engineering, and health care. Although Oliver & Prosser (2007) found the same pattern of humanities and social sciences majors ultimately choosing library science and found persons' "dissatisfaction with jobs or job prospects" (p. 528) as contributing to choosing library science, this study provides new economic statistical data and logistic regression data consistent with their survey findings which did not include income information.

Comparing this study's findings to Perna's (2004) findings shows in both studies the economic factor of enrollment by females in a master's degree with undergraduate majors in the lowest quartile of salaries as increasing the likelihood of graduate enrollment (p. 518). For males, the findings differed, with males in Perna's study being equally likely to enroll from different salary quartiles, but males in this study being more likely to enroll when in the lowest salary quartile by major. Douglas' (2017) study of graduate business students found females and males as more likely to enroll if they had undergraduate majors in the lowest salary quartile (p.119).

Since those from this study and from Douglas' (2017) study who were in the lowest salary quartile were the most likely to choose a graduate program, this is consistent with human capital theory (Becker, 1962), and with Perna's (2006) model. This indicates that students make educational decisions based on the expectation of future earnings after obtaining another degree being better than their current job's income or job prospects' earnings.

Another economic factor in students' expected costs and benefits analysis, which was significant in influencing the decision to enroll, was whether the students had dependents. Having dependents made it highly unlikely to enroll in library science. This study did not find in the literature review of library science graduate choice any prior consideration of students' status as parents as an influence on the decision to enroll.

Comparing this study and Douglas' (2017) on the factor of having dependents on the decision to enroll shows females in both studies were less likely to enroll than females without dependents. Having dependents influenced the decision to enroll among library science students more than it influenced enrollment by those students entering

business graduate school (p. 122). For library science students, the findings were similar for men, but for business students men with dependents were more likely to enroll in graduate business school (Douglas, 2017, p. 122).

Cultural capital factors influence the likelihood of attending library science graduate programs. It was highly unlikely a student grew up in a home without English as the primary language. It was highly unlikely a student would enroll if the parent's highest degree were a high school diploma. One can conclude from this study that students from homes where they did not have English as the primary language and those who were first-generation college students would be unlikely to enroll in library science. These are new findings not found in the review of library science literature.

Although in this study first-generation college students of both genders were unlikely to enroll in library science, in Douglas' (2017) study the first-generation college students who were female were more likely to enroll in graduate study with only males being less likely to enroll (p. 126). In Perna's (2004) study, parents' education was a significant factor for both males and females (p. 504). Finding differences in gender by discipline may be an area for further study.

The social capital factor most influencing the decision to enroll was the Carnegie Classification of the institution the student attended as an undergraduate. The literature review of library science literature did not find any articles examining the type of institution the undergraduate student attended. Those attending a doctoral-research university as an undergraduate were more likely to enroll in library science.

Douglas (2017) and Perna (2004) approached the factor of Carnegie Classification of institutions attended as an undergraduate differently than in this study. Douglas

particularly examined the findings for private for-profit (pp. 127-128), for example. Perna (2004) used different Carnegie Classification groupings (p. 508). My study focused on level of institution of Carnegie Level I doctoral/research and of Carnegie Level II regardless of whether it was public or private. What all the studies share is a finding that attending a research institution as an undergraduate increases the likelihood of enrolling in graduate school.

Since the population of library sciences students was predominately White, one cannot confidently draw conclusions on these economic, cultural, and social factors based on race/ethnicity. Findings for females and males were similar so one could not draw any unique conclusions about the influences of any of the factors by gender, with the exception of females having dependents and females having parent's highest educational level as high school as being statistically significant influences on the enrollment decision.

As planned, this study adds to the literature on graduate study choice by examining economic, cultural, and social capital factors on enrollment in library science. It adds to the literature by using a national sample. It further tested Perna's (2006) model for examining graduate students choice.

The knowledge gained in this study should assist in recruitment to library science graduate study in general though the sample did not include enough persons with race/ethnicity other than White to differentiate recruitment to specific racial/ethnic populations.

One specific area in which Perna's (2004) study, Douglas' (2017) study, and this study agree is the finding of attendance at a research institution as an undergraduate increased the likelihood of attending graduate school.

Implications for Practice and Research

In the area of practice, library associations, graduate program administrators, and librarians can potentially use the findings in this study to improve recruitment into the library field. The findings in three areas are of particular use: 1) economic considerations including income, projected income, and dependents, 2) underrepresented groups of first-generation students, non-English speaking in home, and minority races and ethnicities, and 3) under-representation of students from institutions other than doctoral/research institutions.

In the area of research, the study raised many questions due to limitations and delimitations posed by the data set being comprised of so many White females. The data set also presented problems due to being comprised of data over the short time span of those graduating in 2008 until enrollment in 2012.

In the first area to consider for implications on practice, one should consider library science students had lower incomes and/or lower parent's incomes as undergraduates. This should lead library graduate schools to consider how adequate financial incentives such as scholarships, assistantships, and other financial aid may lead to additional recruitment. Library students generally had undergraduate majors from the lower salary tiers. To have more diversity in undergraduate majors, one would need to provide recruitment material to students in other majors to include statistics on librarians' salaries that are comparable to what the students may expect in the higher income fields.

There are niche areas in many fields of librarianship including administration and jobs in private sectors with salaries more appealing than what students may expect for average starting salaries.

Another important implication for practice is the finding related to having dependents making it very unlikely one would enroll. This could also indicate a need for scholarships, assistantships, and other financial aid to make the decision to enroll easier. Universities with daycares could promote those when recruiting.

Although the data set did not have enough diversity in race and ethnicity to make conclusions by race/ethnicity, the findings did show students were less likely to enroll if English was not the primary language at home and if they were first generation students. Recruiting persons from those two groups should increase diversity. Thinking about recruitment needs take place at all levels of the library field. All librarians need to be sure the libraries are welcoming for all persons for this to be successful. Creating a positive experience in libraries can occur as early as when children are interacting with school and public librarians.

Recruitment into the library field needs to occur early as well due to the influence of the type of institution on the likelihood of enrollment. If students are more likely to enroll in library science after undergraduate study at a doctoral/research university, then mentoring and preparation at the high school level for undergraduate admission to a doctoral/research university is important.

Since this study's data set contained so many White females, researchers could gain more information through analysis of data with adequate numbers of males and those from other races/ethnicities for the statistical software to produce more data.

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Researchers could also gather more information had there been more time lapsed from undergraduate graduation until enrollment in a library science program as more students over time make that choice. Researchers should watch for later releases of data from the NCES in order to re-examine the data.

If researchers had a larger sample, they could run comparable statistical tables and logistic regressions using Perna's (2006) model. With a larger sample, one could find out more about the influences of the economic, cultural, and social capital factors on enrollment by gender and race/ethnicity. There are possibilities also for using Perna's (2006) model to analyze a data set by region rather than a national data set.

Recommendations for Further Research

In addition to further research by gender, race/ethnicity, and by region, this study presented findings which led to additional questions researchers could examine. Since this was a quantitative study, researchers could do a qualitative or mixed methods study to find out more about why library science students may come from backgrounds of lower incomes than other graduate students do.

In furthering the understandings of graduate study choice based on Perna's (2006) model, researchers could try to find out why there was a difference by gender by disciplines as was shown by comparing this study and Douglas' (2017) study. One could also research what recruitment efforts would be helpful to encourage enrollment in a particular field of study and if those practices need to differ by gender or race/ethnicity.

Since there was a difference in the decision to enroll by first-generation students by gender and by discipline (library science versus business) in comparing this study and Douglas' (2017) study, researchers could work to determine why. Researchers could also

determine what recruitment practices would be effective to recruit first generation students into a particular discipline.

Few students were from homes in which English was not the primary language growing up. Researchers could investigate the reasons for that and could research effective recruitment of students from that population. Since library science students were more likely to have attended doctoral/research institutions as undergraduates, qualitative or mixed-methods research could add to the understanding of why that characteristic led to enrollment. Another avenue of research could be on effective recruitment of students from institutions, which are not doctoral-research universities.

The key recommendation from this study is there must be a concerted effort on the part of library associations, graduate school administrators, and librarians to work to improve recruitment into the field of library science since the field is not diverse. This study points to the need for six areas of improvement:

1. Researchers must learn more about the reasons for persons to make the choice of library science and how that varies by gender, race, and ethnicity.

2. Recruitment needs to address the specific shortages of first-generation students and those who are from families without English as the primary language as well as the shortages of males, and shortages of all races and ethnicities other than White.

3. Recruitment needs to begin early so that students will want to become librarians even at the level of high school or earlier so they can be academically prepared for attendance at doctoral/research institutions as undergraduates.

4. Although the literature review did find some library sciences graduate faculty research, these efforts should continue and expand to inform better practice for all librarians. Graduate library program faculty have a role to play in preparing students who are prepared to take leadership roles in diversity efforts across all types of libraries and across all types of librarianship.

5. Librarians and library associations should participate in recruitment efforts by encouraging library staff and student assistants to consider librarianship, should strive to have diverse and inclusive environments such that potential diverse candidates would want to consider librarianship, should have diversity and inclusion training, and should engage in diversity hiring practices. Librarians should be knowledgeable and resourceful when encouraging persons who are less likely to enroll in library science as identified in this study. These include non-White race/ethnicities, males, first-generation college students, those with dependents, English not primary language in homes, those attending non-doctoral/research institutions as undergraduates, and those with business, engineering, and healthcare majors.

6. Library science graduate programs need to provide adequate financial support since library students may come from lower income backgrounds than other graduate students and need to provide support for students who have dependents.

Applying a critical theory lens to suggest actions for diversity recruitment and retention planning, I created a *Critical Theory Based Framework for Diversity in Libraries Action Plan*, for increasing recruitment of the underrepresented groups identified in my study. The tool suggests social justice actions to improve early

recruitment and support to underrepresented groups, recruitment at the undergraduate level, social justice education at the graduate LIS level, and recruitment and retention efforts in libraries. The critical theory and related concepts, and suggested actions are meant to be representative, not exhaustive, lending the tool to customization for one's own social justice actions.

Table 23

Critical Theory Based Framework for Diversity in Libraries Action Plan

Increase Representation in LIS among these Groups	Early Recruitment Prior to College	Recruitment Undergraduate Years and Prior to Graduate LIS	Graduate LIS Education	Recruitment and Retention in Libraries
Non-White Races/Ethnicities	Concept: "Critical caring" – "both individual and communal concerns" (Wilson et al., 2013, p.127) Actions: "Practices… promoting collective uplift, forming community bonds, counteracting oppressive forces, and seeking social justice" (p. 127) By whom: K-12 and Public Librarians with teachers/principals	Concept: Social networks (Perna, 2004, p. 523) Actions: Inviting undergraduates to summer programs, mentoring, other interactions to increase knowledge of programs and likelihood of enrollment (p. 523), review of LIS websites and other recruitment material for inclusiveness By whom: LIS programs/LIS student groups partnering with others on campuses; library associations	Concepts: "Cultural and racial competencies" (Wilson et al., 2013, p. 126), "Social justice education" (Sensoy & DiAngelo, 2017) Actions: Coursework, field experiences (Allard Mehra, & Qayyum, 2007; Wilson et al., pp. 126-127; other Mehra and Rioux works); fair employment practices; leadership for diverse and inclusive libraries By whom: LIS faculty	Concept: "Critically self-reflect and decenter white privilege" (Wilson et al., 2013, p. 125; Hathcock, 2015;Swanson, Tanaka, & Gonzalez-Smith, 2018) Actions: Staff development, examine hiring policies/practices (recruitment, salary offers) and promotion practices, conduct audit of workplace climate By whom: Library leaders and library employees

Table 23

Critical Theory Based Framework for Diversity in Libraries Action Plan (continued)

Increase Representation in LIS among these Groups	Early Recruitment Prior to College	Recruitment Undergraduate Years and Prior to Graduate LIS	Graduate LIS Education	Recruitment and Retention in Libraries
Gender - Males	Concept: "Changing the discourse around gender" (Grogan & Dias, 2015, p. 120) Actions: Gender inclusive environment, books portraying persons in underrepresented fields (men as librarians, nurses; women in STEM), class assignments, staff development on gender issues (Grogan & Dias, 2015) By whom: K-12 librarians with teachers/principals	Concept: "Changing the discourse around gender" (Grogan & Dias, 2015, p. 120) Actions: Review of LIS program websites, other recruitment material for inclusiveness of males; individual actions by librarians to include males in career aspiration discussions By whom: LIS directors, all librarians	Concept: "Changing the discourse around gender" (Grogan & Dias, 2015, p. 120) Actions: Increase LIS students' knowledge of gender issues, history of gender in librarianship, gender gap income inequality, male overrepresentation in administration, gender climate, gender bias, and discrimination By whom: LIS faculty	Concept: "Changing the discourse around gender" (Grogan & Dias, 2015, p. 120) Actions: Gender issues staff development, examination of hiring policies and practices, gender climate By whom: Library leaders and all librarians
First generation students - Cultural capital considerations	Concept: "Culturally responsive theories of education" – "all … bring rich cultural and linguistic knowledge…" (Dudley-Marling, C. & Dudley-Marling, A., 2015, p. 46) Actions: Collection development of content relevant to teachers' units using culturally relevant pedagogy, (p. 46) By whom: K-12 librarians and teachers	Concept: Cultural capital Actions: Read library literature on serving first generation students (Ilett, 2019), interact with 1st generation students, recruit 1st generation students to LIS By whom: Academic librarians	Concept: Culturally responsive theories and cultural capital Actions: Read education literature on teaching first generation students, coursework on non-discriminatory practices and anti-bias education By whom: LIS faculty	Concept: Cultural capital Actions: Examine hiring practices/ hiring decisions/salary offers to avoid discrimination against first generation students due to incorrectly perceived lack of cultural capital By whom: Librarians with hiring authority

Table 23

Critical Theory Based Framework for Diversity in Libraries Action Plan (continued)

Increase Representation in LIS among these Groups	Early Recruitment Prior to College	Recruitment Undergraduate Years and Prior to Graduate LIS	Graduate LIS Education	Recruitment and Retention in Libraries
Bilingual students - Cultural capital considerations	Concepts: Critical race theory - "Community cultural wealth," and "linguistic capital" (Yosso, 2005) Actions: Collection development valuing bilingual persons and their knowledge/experiences; library programming for students and parents By whom: K-12 and public librarians with teachers	Concepts: Critical race theory - "Community cultural wealth," and "linguistic capital" (Yosso, 2005) Actions: Recruit bilingual students by emphasizing the value of their communication skills By whom: LIS programs and library associations	Concepts: Critical race theory - "Community cultural wealth," and "linguistic capital" (Yosso, 2005) Actions: Coursework, field experiences By whom: LIS faculty	Concepts: Critical race theory - "Community cultural wealth," and "linguistic capital" (Yosso, 2005) Actions: Staff development, examine hiring policies and practices, conduct audit of workplace climate By whom: Library leaders and library employees

Table 23

Critical Theory Based Framework for Diversity in Libraries Action Plan (continued)

Increase Representation in LIS among these Groups	Early Recruitment Prior to College	Recruitment Undergraduate Years and Prior to Graduate LIS	Graduate LIS Education	Recruitment and Retention in Libraries
Students who attended non-doctoral/research institutions as undergraduate – Social capital considerations	Concepts: Social Capital, Social Networks Actions: Early mentoring and support for students to prepare them for doctoral/research institutions, if possible, due to increased odds of that attendance contributing to entering library science By whom: K-12 librarians	Concepts: Social Capital and Information Literacy; Social Networks Actions: Read literature on critical librarianship and information literacy, use information literacy to enhance academic cultural capital (Folk, 2019); recruitment at non-doctoral/research institutions By whom: Academic librarians particularly at non-doctoral/research institutions; LIS programs		

Table 23

Critical Theory Based Framework for Diversity in Libraries Action Plan (continued)

Increase Representation in LIS among these Groups	Early Recruitment Prior to College	Recruitment Undergraduate Years and Prior to Graduate LIS	Graduate LIS Education	Recruitment and Retention in Libraries
Students with Dependents – Economic considerations	Concept: Non-discrimination against teen parents Actions: Raise awareness of Title IX, examine school's attendance policies, support for healthcare (Gorgan & Dias, 2015, p. 130), collection development of supportive books and other materials to help this group stay in school By whom: Principals, teachers, and K-12 librarians	Concept: Higher education institutions' support or lack of support Actions: Provide support through financial aid of grants, scholarships, and loans; campus daycare; flexibility in class offerings to include online By whom: Academic librarians as advocates on campus with other campus officials	Concept: Higher education institutions' support or lack of support Actions: Support through financial aid of grants, scholarships, and loans; campus daycare; flexibility in class offerings to include online By whom: LIS programs and other campus officials	Concept: Workplace support for those with children Actions: Examine policies for support for those with children, flexibility in hours, daycare support, etc. By whom: Library leaders
Business, Engineering, Healthcare Majors - Economic considerations		Concept: Social networks Actions: Raise awareness of LIS as an alternative path for business, engineering, and healthcare majors, invite to special LIS programs By whom: LIS programs with undergraduate schools, student groups		Concept: Economic considerations Actions: Raise librarian salaries to reflect complexity of work and to attract persons from higher paid fields of study; increase awareness of higher salaries By whom: Library administration

In conclusion, this study adds to the research on graduate study choice, advocates for more study to occur to further the understanding of those choices, and recommends that all librarians take responsibility for improving the diversity of librarianship. The study showed that economic, cultural, and social factors do influence the decisions to enroll. Further research needs to find out the reasons why those factors influence the decisions and how librarians can take social justice actions to improve diversity and to influence the recruitment of diverse students into the library field. This study provides a *Critical Theory Based Framework for Diversity in Libraries Action Plan* for planning social justice actions to increase LIS representation among the study's underrepresented groups.

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Appendix A

Occupations Predominately Female and White

Appendix A

Occupations Predominately Female and Secondarily Predominately White

Percent of Total Employees

Professional Occupation	Total in Thousands	Women	White	Black/African American	Asian	Hispanic or Latino
Meeting and event planners	137	85.1	91.6	4.7	1.4	9.0
Fundraisers	84	77.3	88.4	8.8	0.2	2.6
Social workers	802	82.5	69.5	23.5	4.0	14.0
Preschool and kindergarten teachers	712	97.7	77.1	16.2	3.4	14.1
Elementary and middle school teachers	3,268	79.7	85.2	10.1	2.9	10.1
Special education teachers	422	85.6	86.2	10.0	2.4	7.9
Librarians	194	79.5	86.3	6.4	5.2	10.4
Dietitians and nutritionists	114	94.1	79.7	12.8	5.6	9.0
Occupational therapists	122	87.6	82.9	8.7	6.4	6.2
Special-language pathologists	141	98.0	93.0	2.8	2.7	10.5
Therapists, all other	221	83.3	81.8	12.5	3.3	10.2

Note. Data from U. S. Department of Labor, Bureau of Labor Statistics. (2017). *Household data annual averages: Employed persons by detailed occupation, sex, race, and Hispanic or Latino ethnicity.* Retrieved from https://www.bls.gov/cps/cpsaat11.pdf

Table includes only those professions near or exceeding librarians' percentage of predominately female and secondarily predominately white. Other professions are majority female and/or majority white, but do not exceed percentage of librarians who are female. Table includes only occupations that generally require a bachelor's degree or higher.

Appendix B

Baccalaureate and Beyond Data Tables

Table B1

Full-scale interview core data elements, by section and topic: 2012

Section	Topic
Eligibility	• Confirm completion of bachelor's degree requirements at the NPSAS institution between July 1, 2007, and June 30, 2008 • Confirm award of bachelor's degree at the NPSAS institution between July 1, 2007, and June 30, 2008 • Marital status / financial responsibilities shared with another / household composition
Undergraduate Education	• NPSAS first postsecondary institution • Undergraduate enrollment at other postsecondary schools between high school and bachelor's degree • Date first enrolled and last enrolled at other postsecondary schools • Credits attempted to transfer from other postsecondary schools / proportion that were accepted at the NPSAS institution • Ability to complete bachelor's degree without attending 2-year college • Satisfaction with quality of education received at the NPSAS institution • Satisfaction with undergraduate major choice

Postbaccalaureate Education/Training	• Enrolled for degree or certificate since completing bachelor's degree
	• For each postbaccalaureate degree or certificate:
	  - Name of institution
	  - Enrollment status
	  - Degree type
	  - Date first enrolled for degree or certificate, and date last enrolled for degree or certificate
	  - Primary major
	  - Date degree or certificate awarded
	  - Master's degree earned en route to doctoral degree and date received
	  - Enrollment intensity (full-time, part-time, or mixed)
	  - Hours worked per week while enrolled
	  - Type of financial aid received
	  - Ratio of financial aid to out-of-pocket costs
	  - Stress of paying for and attending school
	• Delivery mode (online / weekend / at night) of classes taken
	• Alternative plans if not enrolled in postbaccalaureate education
	• Nondegree coursework and reasons for enrolling
	• Type of undergraduate loans
	• Federal student loans for all education (status and repayment amount)
	• Private student loans for all education (total amount borrowed/owed, status, interest rate, and repayment amount)
	• Satisfaction with degree or certificate program
	• Number of other schools applied to/accepted
	• Help from family/friends in repaying loans
	• Level of stress due to education-related debt
	• Preparation for postbaccalaureate program (applied, reason for not attending, entrance exams)
	• Probability of enrolling in another postbaccalaureate program
	• Factors in choosing postbaccalaureate program

See notes at end of table.

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Table B1

Full-scale interview core data elements, by section and topic: 2012 - continued

Section	Topic

Postbaccalaureate Employment	• Worked since earning bachelor's degree
	• For all employment since bachelor's degree:
	  - Employer name and location
	  - Job title and duties
	  - Salary, average hours worked per week, months worked, and full-time or part-time status
	  - Reason for breaks in employment
	• For a maximum of three jobs with reported employment for three months or more:
	  - Type of employer and industry
	  - Employer benefits offered and overtime/bonuses/commission earned
	  - Reason working more or less than full-time and preference
	  - Job related to degree(s)
	  - Occupation licenses (type of license, requirements, relevance to work)
	  - Description of noncareer path job
	  - Job satisfaction
	  - Reason no longer working for employer
	• Activities during periods of unemployment
	• Primarily a student or employee
	• Job search activities (months looking for work, importance of benefits)
	• Status while not working (enrolled in school, traveling, volunteering, disabled, homemaker, temporarily laid off)

Teaching	• Identify current and prospective teachers (current or past teachers, made formal preparations for teaching career or considered teaching)
	• Applying for teaching positions (applied for teaching positions, received offers, reasons for not applying, factors that influenced decision to pursue teaching career)
	• Teaching certification (type, date earned, field of certification, alternative route, student teaching, preparation to become certified, completed student teaching or practicum)
	• For each teaching position:
	  - Type of position (regular, short or long-term substitute, teachers' aide, support, itinerant, student teacher)
	  - Start and end dates, months worked per year, hours worked per week, and full-time or part-time status
	  - Schools (location, district name, sector)
	  - Salary and benefits offered
	  - Teaching experience (grades and subjects taught, felt adequately prepared, internship or induction programs, received help from district)
	• Plans to teach in the future and probability of a nonteaching job in the education field
	• Satisfaction in teaching position, and reason for leaving teaching
	• TEACH grant program and loan forgiveness (participation, influence on decision to become a teacher)

Student Background	• Demographics (date of birth, citizenship) • High school attended (sector) • Native language • Military service • Age of dependent children and total number of dependents • Day care costs for dependent children • Assets and investments (retirement fund, home value, value of assets compared to debt) • Housing payments and vehicle loan payments • Income for calendar year 2011 from all sources • Spouse's or partner's information (employment status, income for 2011, attended college in 2012–13 school year, amount borrowed or owed in student loans, repayment amount, highest level of education completed) • Highest level of education completed by mother, father • Perception and influence of education cots • Financial stress • Civic and volunteer activity (type, hours per month)
Locating	• Contact information for potential follow-up survey

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12).

Table B2

NPSAS:08 sampled and eligible institutions and enrollment list participation rates,
by institution characteristics: 2007-08

Institution characteristics[1]	Sampled institutions	Eligible institutions	Institutions providing lists		
			Number	Unweighted percent	Weighted percent[2]
All institutions	1,960	1,940	1,730	89.0	90.1
Institution level					
Less-than-2-year	130	120	100	82.6	83.2
2-year	570	560	510	89.7	90.7
4-year non-doctorate-granting	700	700	630	89.7	91.9
4-year doctorate-granting	560	560	500	88.8	88.6
Institution control					
Public	960	960	880	91.9	91.2
Private nonprofit	650	640	560	87.4	86.7
For-profit	350	340	290	83.6	88.2
Institution type					
Public					
Less-than-2-year	20	20	20	90.9	93.2
2-year	450	450	410	91.7	91.2
4-year non-doctorate-granting	200	200	190	94.4	95.4
4-year doctorate-granting	290	290	260	90.7	89.2
Private nonprofit					
Less-than-4-year	20	20	20	84.2	84.7
4-year non-doctorate-granting	370	370	320	88.2	87.9
4-year doctorate-granting	260	260	230	86.5	85.9
For-profit					
Less-than-2-year	100	90	70	80.4	81.0
2-year or more	260	250	210	84.8	90.2

[1] Institution characteristics were based on data from the sampling frame that was formed from IPEDS:2004–05 and freshened from IPEDS:2005–06.
[2] The base weight was used to produce the estimates in this column.
NOTE: Percentages were based on the unrounded count of eligible institutions. IPEDS = Integrated Postsecondary Education Data System. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2007–08 National Postsecondary Student Aid Study (NPSAS:08).

Note. From *2008/12 Baccalaureate and beyond longitudinal study (B&B:08/12) data file*

documentation (NCES 2015-141) (p.7) by M. Cominole, B. Shepherd, and P. Siegel,

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