

ABSTRACT

FELDER, ANDREA DARLENE. Factors that Contribute to Transfer and Bachelor's Degree Attainment of Low-income Community College Beginners. (Under the direction of Dr. Alyssa Rockenbach).

Transfer and bachelor's degree attainment rates of low-income community college beginners lag behind their middle- and high-income peers. As community college continues to be an affordable and accessible route to higher education, consideration should be given to how to close the gap in transfer and bachelor's degree attainment rates of low-income community college beginners. The purpose of this study was to examine the factors that influence the successful transfer and bachelor's degree attainment of low-income community college beginners. Theories that guide this study include Bean and Metzner's (1985) model of nontraditional student attrition and St. John, Paulsen, and Starkey's (1996) financial nexus model. This study examined how background characteristics, academic factors, environmental factors, and college experiences impact transfer and degree attainment of low-income community college beginners.

Using data from the *Beginning Postsecondary Students Longitudinal Study 2004-2009*, logistic regression analysis was used to predict the odds of transfer and degree attainment of low-income community college beginners.

Findings from this study indicate that higher scores on SAT or ACT, attending college full-time, receipt of loans, and first year cumulative college GPA significantly predicted the odds of transfer and degree attainment of low-income community college beginners. However, the odds of transfer and degree attainment were significantly reduced for students who were married or had dependents. The odds of degree attainment were also significantly reduced for students who identified as Hispanic.

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Factors that Contribute to Transfer and Bachelor's Degree Attainment of Low-income
Community College Beginners

by
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A dissertation submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of the
requirements for the degree of
Doctor of Education

Higher Education Administration

Raleigh, North Carolina

2016

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DEDICATION

To my parents, Henry and Clara, for the encouragement to pursue my education. To my sisters, Alyson and Angela, for not letting me quit. To my friends for the extra push to finish.

BIOGRAPHY

Andrea D. Felder is the Director of Freshman and International Admissions at the University of Florida. She is responsible for the outreach, recruitment, scholarship and admission efforts of first year and international applicants. Originally from Mitchellville, MD, Ms. Felder earned her Bachelor of Arts degree in International Studies from the University of North Carolina at Chapel Hill and her Master of Education degree in Higher Education Administration from North Carolina State University.

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Ms. Felder enjoys spending time with her family and traveling to new and exotic places around the world.

ACKNOWLEDGMENTS

I would like to thank several individuals for their support and encouragement throughout my dissertation writing journey. Special thanks to my advisor and committee chair, Dr. Alyssa Rockenbach, for support and encouragement throughout the dissertation writing stage. I am also grateful for her flexibility as I finished writing the last three chapters. Thanks to the other members of my committee, Dr. Audrey Jaeger, Dr. Duane Akroyd, and Dr. James Bartlett for their feedback and encouragement.

I would like to express gratitude to my co-workers from the Office of Undergraduate Admissions at the University of North Carolina at Chapel Hill and the Office of Admissions at the University of Florida. Special thanks to Steve, Barbara, and Allison for their flexibility with my work schedule. Also, thank you to Christina and others on the freshman and international team for giving me credit before it was due. Because of your motivation, I was able to finish my dissertation.

To my friends that have supported me through the years – Cherie, Kim, Dina, Chad, Richard, and Charles – thank you. I am grateful for your love and friendship. Several other friends have supported me along this journey. Too numerous to list, but I am grateful for each of you.

Lastly, I want to praise God for all He has done for me. He blessed me with a wonderful family - mom, dad, Alyson, Angela, Lauryn, and Clayton. You are all wonderful and I praise Him for each and every one of you.

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CHAPTER ONE

INTRODUCTION

As more jobs require education beyond a high school diploma, the United States will need to consider ways to not only provide greater access to higher education, but also improve degree completion for those who move into postsecondary education from low-income backgrounds. There exists a 30% gap in college attendance rates between low- and high-income high school graduates (Bozick & Lauff, 2007; Walpole, 2007). Only 12% of traditionally aged students from low-income backgrounds will earn a bachelor's degree, compared to 73% of higher-income students (Engle & O'Brien, 2007). Compared to students in middle- and high-income brackets, students in the lowest income quartiles are less likely to earn any credential from a community college or transfer to a four-year institution (Bailey, Jenkins, & Leinbach, 2005). While the college degree attainment gap is partly explained by lower college-going rates among low-income students, low-income students who do enroll in college are less likely to transfer and persist through degree completion than their higher-income peers (Corrigan, 2003; Purnell, Blank, Scrivener, & Seupersad, 2004; Mortenson, 2007; Wells, 2008; Wilt, 2006). Prior research on traditional students and students who begin at a four-year college has demonstrated that students' demographic characteristics, high school preparation, expectations about college, and experiences in college are related to persistence and degree attainment (Astin, 1993; Bean & Metzner, 1985; Pascarella & Terenzini, 1991, 2005; Tinto, 1993). However, little attention has been given to understanding the factors that contribute to the persistence and degree attainment of low-income students, let alone the success of low-income students who transfer or earn a bachelor's degree after beginning at a community college (Mamiseishvili & Deggs, 2013).

Community colleges continue to play an important role in higher education as they are often the more affordable and accessible entry point for students in higher education (Mullin, 2011). Because of their lower costs and less rigorous admission requirements, community colleges appeal to low-income students and students who may not have the credentials to enroll in a four-year university (Mullin, 2011). During the 2009–10 school year, 7.2 million undergraduate students were enrolled in public two-year colleges, representing approximately 40% of the nation’s undergraduates in higher education (Knapp, Kelly-Reid, & Ginder, 2012). Issues such as affordability, changing demographics, and workforce demands are causing an increase in demand on community colleges (Advisory Committee on Student Financial Assistance, 2008). Many students are relying on community colleges for access to the baccalaureate because of sharply rising tuition costs, stagnating need-based student aid, slumping incomes for less advantaged families, and the reduction of remedial education at four-year universities (Dougherty & Kienzl, 2006). It is estimated that between 25 and 40% of community college entrants will eventually transfer to a four-year college or university (Dougherty & Kienzl, 2006; Lee, Mackie-Lewis, & Marks, 1993; Peter & Forrest-Cataldi, 2005).

Although community colleges may serve as a good entry point into higher education for students from low-income backgrounds, several studies have shown that students who begin at community colleges are less likely to transfer and attain a bachelor’s degree from a four-year university compared to students who begin their college career at a four-year institution (Ishitani, 2008; Leigh & Gill, 2003; Long and Kurlaender, 2009; Sandy, Gonzalez, & Hilmer, 2006; Townsend & Wilson, 2006). Among students who first enrolled in a public two-year institution in the 2003–04 academic year, about 12% had received a bachelor’s

degree within six years from any institution (Radford et al., 2010). A challenge for community colleges is serving traditionally underserved populations and students who would not otherwise attend college (Crisp & Mina, 2012). Demographic, academic, financial, and social barriers contribute to the low rate of persistence among students who begin at a community college (Advisory Committee on Student Financial Assistance, 2008).

Community college beginners are more likely to be low-income, first-generation college-goers and underrepresented racial and ethnic minorities (Bailey, Jenkins, & Leinbach, 2005; Cohen & Brawer, 2008; Hagedorn, Cabrera, & Prather, 2010). Community college students are also more likely to engage in nontraditional enrollment patterns (e.g., delayed entry, part-time enrollment, and non-continuous enrollment) that are associated with increased departure from postsecondary education (Cabrera, Burkum, & LaNasa, 2005; Hoachlander, Sikora, & Horn, 2003). Many low-income community college students lack the academic resources and degree aspirations relative to their higher-income peers, which prevents them from achieving greater transfer and completion rates (Cabrera, Burkum, & LaNasa, 2005). Lastly, low-income community college students tend to be older, less likely to receive financial support from parents, and more likely to have multiple obligations outside of college, such as family and work, that limit their full participation in the college experience (Engle & Tinto, 2008). In summary, there are multiple barriers that may impact transfer and degree completion of low-income community college beginners. While it is imperative to consider the factors that impact the transfer and degree completion of low-income community college beginners, there has been little research on the paths low-income students take towards degree completion (Jenkins & Weiss, 2011).

Problem Statement

Although community colleges provide greater access to higher education, low-income community college beginners are less likely to transfer and subsequently attain a bachelor's degree from a four-year institution given individual demographic, academic, financial, and social barriers (Ishitani, 2008; Leigh & Gill, 2003; Long & Kurlaender, 2009; Sandy, Gonzalez, & Hilmer, 2006; Townsend & Wilson, 2006). The low transfer rates of community college students to four-year institutions prohibit successful bachelor's degree attainment (Crisp & Mina, 2012). Even after controlling for demographic background information and academic preparation, students who begin their education in community colleges seem to have a lower likelihood of transfer and bachelor's degree completion (Alfonso, 2006; Dougherty, 1992; Monk-Turner, 1995; Whitaker & Pacarella, 1994). Given the disparity in degree attainment among low-income community college beginners, it is imperative for higher education researchers to consider the factors that contribute to successful transfer and bachelor's degree attainment of low-income community college beginners.

While we know that attendance at community colleges can have a negative impact on transfer and four-year degree attainment (Christie & Hutcheson, 2003; Crook & Lavin, 1989; Dougherty, 1992; Ganderton & Santos, 1995; Rouse 1995; Whitaker & Pascarella, 1994), there are still gaps within the literature. There are few studies that have considered the positive factors that may contribute to low-income community college beginners' transfer to four-year institutions and bachelor's degree attainment. Traditionally, much of the postsecondary persistence and degree attainment literature has focused on students that begin at four-year institutions (Astin, 1993; Bean & Metzner, 1985; Pascarella & Terenzini, 1991, 2005; Pascarella, 2006; Tinto, 1993). Although there has been additional emphasis given to

the role of community colleges in postsecondary education (Hagedorn, 2010/2011), because students enroll in community colleges with various intentions (e.g., to pursue personal interests, transfer to a four-year institution, obtain an associate's degree, learn a job skill, or obtain occupational skills) researchers are unclear on the factors related to successful degree completion of community college beginners (Porchea, Allen, Robbins, & Phelps, 2010). It is possible that researchers are unclear on factors that relate to successful degree completion of community college beginners because much of the prior research on community college student transfer and degree attainment has considered persistence over shorter periods of time, such as one year or two semesters (Hoyt, 1999; Mamiseishvili & Deggs, 2013). Because community college beginners are more likely to enroll on a part-time basis, delay enrollment, or stop-out, studies should extend the length of time to follow-up with the matriculation patterns of community college beginners (Mamiseishvili & Deggs, 2013; Porchea et al., 2010). In addition, prior research on community college beginners is limited to data from single institutions or single states (Bahr, 2009; Bailey & Alfonso, 2005; Marti, 2008). Following community college beginners that matriculate at multiple institutions or matriculate at institutions in multiple states will add to the literature (Mamiseishvili & Deggs, 2013).

Prior research on low-income students also has limitations. This research has often focused on the between-group degree attainment differences of students in middle- and high-income brackets compared to students in low-income brackets. Separate analysis for socioeconomic groups could reveal differing college experiences and processes of transfer and degree completion or non-completion (Trusty & Niles, 2004; Walpole, 2003). While there are few studies that specifically focus on the factors that contribute to successful

transfer and bachelor's degree attainment of low-income students who begin at a community college, what we do know from the literature about low-income students is that there is no single variable that predicts transfer or degree completion of low-income students who begin at community colleges (Mamiseishvili & Deggs, 2013; Wilt, 2006). For low-income students, several factors have been shown to influence transfer or degree completion, such as demographic background, academic preparation, educational goals, external obligations, college GPA, and interactions with faculty and peers (An, 2012; Mamiseishvili & Deggs, 2013; Wilt, 2006). However, few studies have taken a comprehensive approach to consider the specific factors that contribute not only to transfer of low-income community college beginners but also degree attainment of these students (Mamiseishvili & Deggs, 2013; Wang, 2009). A more comprehensive approach in understanding the specific factors that contribute to transfer and bachelor's degree attainment of low-income students will aid practitioners in counseling students from low-income backgrounds towards earning a bachelor's degree.

From the literature, it is clear that low-income community college students face several obstacles (e.g., weak academic preparation, part-time enrollment, external factors that impede on time and enrollment intensity, finances, and interactions with faculty and peers) on their path towards transfer and bachelor's degree attainment (Ishitani, 2008; Leigh & Gill, 2003; Long & Kurlaender, 2009; Sandy, Gonzalez, & Hilmer, 2006; Townsend & Wilson, 2006). While much consideration has been given to understanding the factors that impact degree attainment of traditional college students that begin at four-year colleges (e.g., Astin 1993; Pascarella & Terenzini 2005; Tinto 1993), little research is available that points to the factors that contribute to the transfer and degree attainment of low-income community college beginners (Attewell, Heil, & Reisel, 2011; Wang, 2009). This study considers the

factors that contribute to the successful transfer and bachelor's degree attainment of low-income students who begin their postsecondary education at community colleges.

Purpose

The purpose of this study is to examine the factors that influence the successful transfer and degree attainment of low-income community college beginners using the *Beginning Postsecondary Students Longitudinal Study 04/09* database. This study attempts to identify factors that influence low-income students' long-term educational attainment, thereby advancing the literature on the topic and identifying areas for support and intervention by university administrators and policy makers. The research questions addressed in this study were:

1. What are the effects of demographic characteristics, academic factors, environmental factors, and college experiences on transfer of low-income community college beginners?
2. What are the effects of demographic characteristics, academic factors, environmental factors, and college experiences on degree attainment of low-income community college beginners?

Theoretical Framework

This study tested a general model of student demographic characteristics, academic factors, environmental factors, and college experiences on transfer and bachelor's degree attainment of low-income community college beginners. Several models have been proposed to help explain student persistence. These have included economic models such as the financial nexus between college choice and persistence, in which researchers consider the importance of cost-consciousness on the decision to enroll in college and future persistence

decisions (e.g., St. John, Paulsen, & Starkey, 1996), and interactional models that consider student pre-college characteristics and college experiences to help explain student departure (e.g., Bean & Metzner, 1985). On their own, each of these approaches is instructive in identifying factors that predict student persistence. However, neither specifically considers student transfer decisions or degree attainment. Nor do they consider low-income community college students. Following Braxton, Hirschy, and McClendon's (2004) and St. John's (2006) recommendations to use a multi-theoretical approach to help explain the complex issues surrounding persistence and degree attainment, this study will take a multi-theoretical approach and recommend new applications in considering the transfer and degree attainment for low-income community college beginners.

Economic theories highlight the role of finances and financial aid in the educational attainment process. Regarding the college experiences of low-income students, much of the economic research considers how price and availability of financial aid influences enrollment and persistence decisions (Heller, 1997; St. John, Paulsen & Starkey, 1996; Titus, 2006a). In particular, low-income students make decisions about education based on the expected cost benefits of attending college (St. John, 2006). Because this study concentrates on low-income students, financial influences on transfer and bachelor's degree attainment are relevant. The financial nexus between choice and persistence (Paulsen & St. John, 2002; St. John et al., 1996; St. John, 2000) is a suitable theoretical framework, as it considers how college choice is influenced by financial factors. St. John, Paulsen, and Starkey (1996) found that the perceptions students hold about affordability have a sustained influence on subsequent persistence decisions. More specifically, the financial nexus between college choice and persistence requires the consideration of how two sets of factors influence persistence: (1)

students' perceptions of financial factors, such as the availability of low tuition or high aid, that students view as very important at the time of their initial college choice decisions; and (2) measures of the dollar amounts of financial variables (e.g., tuition, financial aid, living costs) that students actually experience at the time of subsequent persistence decisions (Paulsen & St. John, 2002). The financial nexus model is an appropriate theoretical base as low-income students are more sensitive to the costs of higher education than their more affluent peers (Paulsen & St. John, 2002). If students consider costs to be an important factor in choosing which college to attend, such cost-consciousness may have a direct impact on subsequent persistence decisions (Paulsen & St. John, 2002). Students expect to pay a certain amount and are drawn to a community college because of that expectation. A larger share of students from low-income backgrounds may choose to attend community colleges because of the lower tuition price (Engle & Tinto, 2008). If a student later perceives the actual costs to be higher (due to loss of financial aid or increased tuition prices, for example), the student may decide to leave the institution because of these higher costs associated with attendance.

Interactional theories consider how interactions with others influence the educational attainment process (Tinto, 2000). College experiences such as peer interaction, extracurricular involvement, and faculty interactions enhance educational attainment (Astin & Oseguera, 2012; Astin, 1991, 1993; Carter, 1999; Pacarella & Terenzini, 1991, 2005; Tinto, 1993). Understanding how college experiences may influence transfer and degree attainment for low-income students is also relevant. However, several studies have suggested that differences exist for low-income students' college experiences (Goyette & Mullen, 2006; Terenzini, Cabrera, & Bernal, 2001; Titus, 2006b; Walpole, 2003). For example, low-income students often work more and participate less in extracurricular

activities than middle- and high-income students (Walpole, 2007). In addition, low-income students report faculty interaction in more structured settings, such as working on a research project, while middle- and high-income students were more likely to report visiting faculty in less structured settings such as in faculty homes (Walpole, 2007). Many interactional models used to explain student persistence do not consider how these within-college experiences impact persistence decisions of low-income students or community college students (Braxton et al., 2004). This study drew from Bean and Metzner's (1985) model of student attrition for nontraditional students. In their model, Bean and Metzner (1985) identified four sets of variables as predictors of departure—poor academic performance in college, intent to leave, background variables (including high school performance and educational goals), and environmental variables (including finances, hours of employment, outside encouragement, family responsibility, and opportunity to transfer). In their model, Bean and Metzner (1985) emphasized how environmental variables influenced nontraditional students' decisions to persist through college.

Conceptual Model

The theoretical models guiding this study conceptualize the factors predicting the transfer and degree attainment of low-income community college beginners. Based on Bean and Metzner's (1985) model of student attrition for nontraditional students, and the financial nexus between choice and persistence, the model used for this study identified four sets of variables as predictors of transfer and degree attainment of low-income community college beginners. The independent variables in the study were demographic characteristics, academic factors, environmental factors, and college experiences. The dependent variables were transfer and degree attainment (see Figure 1.1). Bean and Metzner (1985) highlighted

the importance of background characteristics, academic factors, and environmental factors in predicting attrition of nontraditional students. The financial nexus model also placed emphasis on demographic characteristics and environmental factors, specifically finances. The model for this present study used variables that have been previously highlighted to influence persistence decisions. However, these variables have not been tested specifically among low-income community college beginners to determine what influences transfer and degree attainment on this specific population.

Demographic characteristics included age, race/ethnicity, gender, and parents' education. Prior research has demonstrated the influence of these characteristics on persistence and educational outcomes of traditional student populations (Pacarella & Terenzini, 2005). Specific to low-income students or community college beginners, several studies have demonstrated how demographic characteristics influence transfer and degree attainment (Mamiseishvili & Deggs, 2013; Mullen & Eimers, 2001; Porchea, Allen, Robbins, & Phelps, 2010; Schmidtke & Eimers, 2004; Wood, Neverez, & Hilton, 2012).

Academic factors included high school performance (high school grades and standardized test scores), enrollment intensity (attending college full-time or part-time) and educational goals. Prior research has demonstrated that high school academic performance positively predicts transfer and degree attainment (Adelman, 1999; Arbona & Nora, 2007; Wood et al., 2012). In addition to academic performance in high school, enrollment intensity in college influences persistence decisions. Students attending college full-time are more likely to transfer (Mamiseishvili & Deggs, 2013). Lastly, students' assessment of a degree's positive earning potential in the marketplace predicts transfer and degree attainment (Arbona & Nora, 2007; Mamiseishvili & Deggs, 2013).

Environmental factors included finances (cost determining attendance of first institution, grant amount received, and loan amount received), employment (if a student worked part-time, worked full-time, or did not work), and family responsibilities (if a student had dependents and/or was married). Because the financial nexus model considers how students' perceptions and expectations about college costs influence persistence decisions in college (Paulsen & St. John, 2002), this study considered whether cost influenced students' choice to attend a community college as their first institution. In addition to cost, financial aid has been shown to positively influence degree completion of low-income students (Attewell, Heil & Reisel, 2011; Cabrera, Burkum, La Nasa, & Bibo, 2012). In addition to costs and financial support, employment influences transfer and degree attainment. Prior research has shown while working full-time may negatively influence persistence decisions (Astin, 1975; Anderson, 1981), working part-time does not result in similar negative effects (Astin & Oseguera, 2003, 2005; Attewell et al., 2011; Oseguera, 2006). Lastly, prior research has demonstrated mixed results related to the influence of family responsibilities on persistence and degree attainment. Some studies have indicated that outside family obligations negatively influence degree completion (Arbona & Nora, 2007; Astin & Oseguera, 2005; Tinto, 1993), while others have demonstrated that having dependents is predictive of transfer (Wood et al., 2012).

College experiences included academic integration, social integration, and first year cumulative GPA. Prior research has demonstrated the importance of academic and social integration in persistence decisions (Tinto, 1993). Barnett (2011) found that faculty interaction positively predicted community college students' intent to remain enrolled in college. Moreover, several studies have shown that social involvement in college is a key

predictor of transfer (Wood et al., 2012) and degree attainment (Astin, 1993; Bean, 1990, Swail, Redd, & Perna, 2003; Tinto, 1993). Lastly, academic performance early in a student's college career positively predicts degree attainment (Pascarella & Terenzini, 1991, 2005; Adelman, 2006).

The model for this study takes a multi-theoretical approach to understanding the factors that predict the transfer and degree attainment of low-income community college beginners. The variables that reflect interactional theories include demographic characteristics (age, gender, race/ethnicity, parents' education), academic factors (high school performance, enrollment intensity, educational goals), environmental factors (employment, family responsibilities), and college experiences (academic integration, social integration, first year cumulative GPA). The variables that reflect the financial nexus theory include demographic characteristics (age, gender, race/ethnicity, parents' education) and environmental factors (finances). Several prior studies have demonstrated how each of these variables may predict transfer and degree attainment. However, previous research has not used these four categories of variables to examine their effects on low-income community college beginners.

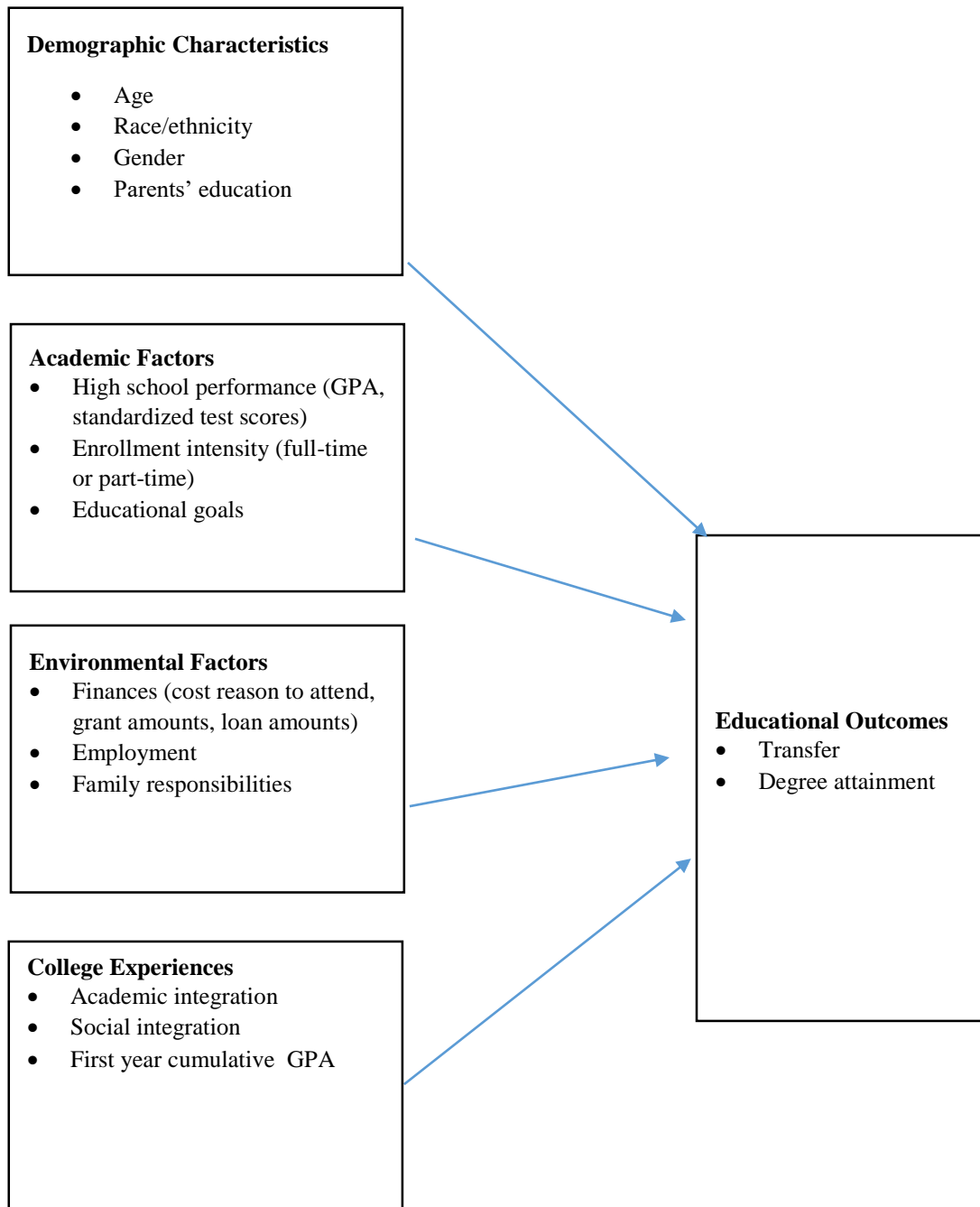


Figure 1.1 Conceptual Model of Transfer and Attainment of Low-income Community College Beginners

Methodology

This study relies on a quantitative approach to examine the transfer and bachelor's degree attainment of low-income community college beginners. To elaborate on existing explanations of degree attainment for low-income students, I propose a model that incorporates factors from economic and interactional perspectives. Using logistic regression, this study hypothesizes how multiple variables predict the odds of transfer and bachelor's degree attainment of low-income community college beginners. The *Beginning Postsecondary Students Longitudinal Study 04/09* (BPS: 04/09), a large, nationally representative longitudinal database, was used to identify the demographic, academic, and financial factors that predicted the odds of transfer and bachelor's degree attainment of low-income community college beginners.

Significance of Study

This study sought to identify the factors that contribute to successful transfer and bachelor's degree completion of low-income students who begin their postsecondary education at community colleges. The *Beginning Postsecondary Students Longitudinal Study 04/09* (BPS: 04/09) has demonstrated that students from the lowest income group who begin their bachelor's degree at four-year colleges are more successful than students who begin their postsecondary education at a two-year college (Berkner & Choy, 2008). Previous research indicates that demographic, academic, environmental, and college experiences influence persistence decisions of low-income community college beginners (Barbatis, 2010; Craig & Ward, 2007/2008; Deil-Amen, 2011; Dowd & Coury, 2006; Karp, Hughes, & O'Gara, 2010; Nippert, 2000; Marti, 2008; Paulsen & St. John, 2002). However, the literature does not make clear what factors have the greatest influence on transfer and degree

attainment of low-income community college beginners. Additional research is needed to understand the factors that contribute to the transfer and successful degree completion of low-income community college beginners.

This study tested a model that points to important demographic characteristics, academic factors, environmental factors, and college experiences that contribute to successful transfer and bachelor's degree attainment of low-income community college beginners. Using a multi-theoretical model provides additional perspectives on the transfer and degree attainment process. Given the expanded role community colleges will continue to play in providing postsecondary access for students from low-income backgrounds, this study will provide insight into how background characteristics, academic factors, environmental factors, and college experiences influence persistence decisions. In addition, given the current limited research on the transfer and degree attainment of low-income community college beginners, this study may suggest the need for further research either on low-income students or community college students. In particular, this study may inform the need for qualitative research that further explores the college experiences of low-income community college beginners.

This study may provide practical guidance for any professionals who work with low-income students. Because of the price sensitivity of low-income students, this study may help financial aid advisors explain college costs to low-income students so they have a clear understanding about financial expectations at postsecondary institutions. In addition, this study may demonstrate to advisors and other staff the importance of strong student and faculty interactions for low-income students. Findings from this study may help policymakers and other stakeholders recognize and understand the importance of strong

financial aid policies on persistence and degree attainment. Not least, these decision-makers may better recognize and understand the role community colleges play in propelling students towards bachelor's degree attainment.

Definition of Terms

For the purposes of this study, the following terms are defined as follows:

Bachelor's degree attainment: refers to persisting through undergraduate study to graduate and earn a bachelor's (B.A. or B.S.) degree.

Educational goals: refers to an individual's assessment of future educational attainment.

Low-income: refers to dependent student family incomes in the lowest 25 percent. For dependent students (those typically under age 24), income level is based on parents' income, while for independent students, it is based on their own income. Income percentiles are determined separately for dependent and independent students.

Non-traditional student: refers to a student who is older than 24, does not live in a campus residence, is a part-time student, or some combination of these factors (Bean & Metzner, 1985).

Parents' educational level: refers to parents' achieved education level. For the purposes of this study, first-generation college students are students whose parents have less than a bachelor's degree.

Transfer student: refers to a student who left one institution and enrolled in another. This definition does not take into consideration whether transfer credits were awarded.

Limitations

Similar to other studies, this study has limitations. In both Bean and Metzner's (1985) model of student attrition and Stahl and Pavel's (1992) modified model for community

college students, major consideration is given to outside encouragement, academic advising, and study habits. Because this study used national secondary data in the *Beginning Postsecondary Longitudinal Study*, these variables are not represented. In addition, there are no suitable proxy variables to provide estimation of these variables. However, there are other measures that allowed me to consider other interactions students have with faculty members and their peers. These variables were considered in the model.

In addition, within the higher education literature, researchers employ various measures to define socioeconomic status (e.g., parental education, parental income, and parental occupational status). For the purposes of this study, I considered parental education and its influence on degree attainment. While comparisons can be made from between-group differences of low-, middle-, and high-income students, this study focused on within-group factors that contributed to degree attainment of low-income students.

The financial nexus model (St. John, Paulsen, & Starkey, 1996) and the model of nontraditional student attrition (Bean & Metzner, 1985) provided strong theoretical grounding to account for student persistence decisions. However, it should be noted that neither model was developed for low-income community college beginners. While finances are a consideration of the financial nexus model, the model was not developed to consider the persistence decisions of low-income students. As well, Bean and Metzner's (1985) model does not distinguish between nontraditional students at two-year and four-year institutions (Mamiseishvili & Deggs, 2013). Despite these limitations, these models provided a well-established basis to help understand why low-income community college beginners transfer and obtain a degree.

Summary

While studies on the impact of transfer and degree attainment of community college beginners has been researched, there is very little empirical evidence on the factors that influence the successful transfer and bachelor's degree completion of low-income community college beginners. Much of the current research focuses on the negative impact of beginning at a community college on bachelor's degree attainment. This research study investigated the factors that contributed to the successful transfer and bachelor's degree attainment of low-income community college beginners.

CHAPTER TWO

LITERATURE REVIEW

A considerable amount of research has been conducted to determine the factors that influence transfer and eventual degree attainment (see Appendix A). The literature on persistence has shown that students from more affluent backgrounds are more likely to enroll and graduate from college (Astin, 1993; Cabrera & LaNasa, 2001; Pascarella & Terenzini, 1991, 2005). This chapter contains a review of the literature related to issues associated with transfer and bachelor's degree attainment of low-income community college beginners. Very little current literature considers specifically low-income community college transfer students who eventually attain a bachelor's degree. However, existing literature that pertains to transfer and eventual degree attainment provides insight into the factors that contribute to the transfer and degree attainment of low-income community college beginners. This review of the literature consists of three parts: (a) literature on low-income students, (b) literature on community colleges, community college students, and low-income community college beginners, and (c) literature on the factors contributing to transfer and degree attainment. The last section includes the most relevant studies that examine the theoretical frameworks used to inform this study—the financial nexus model and the model for nontraditional student attrition. Both the financial nexus model and the model of nontraditional student attrition identify relevant factors in considering low-income community college beginners' transfer and degree attainment.

Low-Income Students

Low-Income Student Enrollment in Higher Education

Over the past three decades, enrollment of low-income students in higher education has continued to grow (Bernhardt, 2013). From 2000 to 2008, the number of students from low-income backgrounds enrolled in postsecondary education increased four percentage points (IHEP, 2011). While it is encouraging that the number of students from low-income backgrounds enrolled in postsecondary education is increasing, there is still a gap in the participation rates of low-income students compared to middle- and high-income students (Bernhardt, 2013). In addition, there is a division between the types of institutions where low-income students enroll compared to their middle- and high-income peers (IHEP, 2011). Compared to their more affluent peers, low-income students are underrepresented in public and private four-year institutions and overrepresented in community colleges and for-profit institutions (IHEP, 2011). While community colleges play an important role in increasing access to postsecondary education, there are sustained differences in the educational outcomes for community college beginners (Snyder & Dillow, 2010; Turner, 2004).

Challenges for Low-Income Students

Low-income students face several challenges to postsecondary enrollment and degree attainment. Low-income students enroll in postsecondary education less often, drop out more frequently, are less likely to return after dropping out and less likely to attain a postsecondary degree (Adelman, 1999; Bowen, Chingos, & McPherson, 2009; Diemer & Li, 2011; Walpole, 2007). The dire educational outcomes for low-income students may be a result of several factors. In particular, low-income students' prior academic preparation is a barrier to enrollment in postsecondary education. Low-income students disproportionately attend

secondary schools that do not provide high-quality education to prepare students for post-secondary education (Bowen, Chingos, & McPherson, 2009; Walpole, 2007). In addition, low-income students are more likely to lack access to rigorous coursework during high school and are tracked into vocational courses and away from more advanced courses (Adelman, 2006; Cabrera & La Nasa, 2000; Martin, Karabel, & Jaquez, 2005; Terenzini et al., 2001; Walpole, 2007).

Another barrier to low-income students' enrollment in postsecondary education is lack of knowledge about the admissions process or the differences among college types (Cabrera & La Nasa, 2000; Choy, 2000; Walpole, 2007). As mentioned above, low-income students are often tracked away from college preparatory courses during high school. Access to four-year colleges typically requires a certain level of academic preparation for admission. Low-income students also often lack the funds to pay for test preparation services, college application fees to multiple colleges to help improve chances of admission, or private consultant assistance with admission applications (Walpole, 2007).

Not only does family background, including socioeconomic status, parents' education, and parental encouragement influence persistence, it also influences a student's decision of where to attend college (St. John, 2000). Using data from the 1988 National Education Longitudinal Study, Cabrera and La Nasa (2001) found that compared to students from the highest socioeconomic backgrounds, students from the lowest socioeconomic backgrounds lacked the appropriate cultural capital (parental and school-based influence) to complete the tasks required to enroll in four-year colleges. Parents from higher socioeconomic backgrounds are more likely to discuss college plans early with their children. Early college plans enable eighth graders and their parents to plan for a college-track

curriculum and extracurricular activities and maintain good academic performance (Cabrera & La Nasa, 2001). However, students from low socioeconomic backgrounds are less likely to be enrolled in a college preparatory track (Kirst & Bracco, 2004). The lack of a college preparatory curriculum will limit the colleges that a student will be able to choose from during the application process. Given the need for early college planning, students from the lowest socioeconomic level often fail to secure the necessary qualifications to apply to and then enroll in four-year colleges at rates similar to their counterparts at the highest socioeconomic level (Cabrera & La Nasa, 2001). Cabrera and La Nasa (2001) found that parental and school-based influence played an important role in determining if students would enroll in a four-year institution, not only at the lowest socioeconomic level, but across all socioeconomic levels. The more involved parents are with students' primary and secondary education, the more likely a student will be to choose to attend a four-year college (St. John, 2000).

Another concern of students from low-income backgrounds is financing their education. Misunderstandings about college costs and ways to pay for college prevail among low-income students (Cabrera, Burkum, La Nasa, & Bibo, 2012). In addition to preparing students academically, early college plans enable eighth graders and their parents to secure information about college financing options (Cabrera & La Nasa, 2001). However, students from low-income backgrounds often will not have early conversations with their parents about financing college. If they do, parents' concerns about the cost of college negatively influence their children's views about paying for college (Hall, Cabrera, & Bibo, 2010). Low-income students will often wait until high school to discuss ways to finance their education; these students are five percent and four percent more likely to discuss financial aid

with high school staff and college representatives, respectively (Cabrera & La Nasa, 2001). Although grants are available for the lowest income group, these students often lack the knowledge and parental support to complete the required forms to receive financial aid. Instead, low-income students are somewhat more likely to attend lower-priced community colleges and are less likely to attend more expensive four-year institutions (Jacobs & King, 2002).

Impact of Financial Aid

Students use various funding sources to pay for postsecondary education, including savings, work, assistance from parents, and financial aid (Schuh & Gansemer-Topf, 2012). As institutional funding sources have shifted, colleges are increasingly reliant on students and families as a revenue source (Schuh & Gansemer-Topf, 2012). As a result, students are becoming more reliant on financial aid to assist in financing their education (Schuh & Gansemer-Topf, 2012). Financial aid is a large, complex, and complicated enterprise (Schuh & Gansemer-Topf, 2012). In 2009–2010, financial aid to undergraduates totaled \$154.46 billion; federal loans comprised 43% of all aid to undergraduates (Baum & Ma, 2010). Financial aid is primarily distributed in the form of grants, loans, tax credits and deductions, and work-study. Grants are the most significant source of financial aid (Schuh & Gansemer-Topf, 2012). Pell Grants have historically served as the primary means for low-income populations to afford higher education (Davidson, 2013). However, the federal government has shifted away from using grants as a source of financial aid to using loans to promote postsecondary opportunities (Chen & DesJardins, 2008; Paulsen & St. John, 2002). The shift to loans has had a disproportionate influence on low-income students (Dowd, 2004). In

addition, financial aid policy has shifted from expanding access to low-income students towards alleviating high costs for middle- and high-income families (Long & Riley, 2007).

Prior studies on student financial aid have indicated that aid is significantly related to student factors and outcomes such as academic achievement, educational commitments, student engagement, and persistence to graduation (Nora, Barlow, & Crisp, 2006). The availability of funds to meet tuition, fees, and other college related expenses impacts both a student's decision to attend college and the choice to remain in college (Baum & Payea, 2003). Bettinger (2004) found that receiving Pell grants appears to decrease the probability of withdrawal among low-income students during their first two years of college. Moreover, Alon (2011) found that need-based grants are an effective tool for raising the college persistence rates of low-income students to the level of more affluent students. In addition to the aid of grants, Rong and DesJardins (2008) found that loans and work-study aid are positively associated with lowering the dropout risk for low-income students. Financial aid positively affects persistence decisions of low-income students.

Summary

The numbers of low-income students enrolled in postsecondary education continues to grow (Bernhardt, 2013). However, low-income students continue to face many challenges as they attempt to access higher education. Academic preparation during high school, lack of knowledge about the steps required to enroll in college, and funding resources influence the enrollment of low-income students on the postsecondary level. However, low-income students who receive financial aid are more likely to persist to degree completion (Attewell, Heil, & Reisel, 2011).

Community College Students

The Community College Context

Community colleges have played an important role in educating society. The nation's first public two-year or community college dates back to 1901 with the founding of Joliet Junior College in Joliet, IL. Joliet Junior College was initially established as an experimental postgraduate high school program meant to accommodate students who desired to remain in their community while pursuing a college education (Hagedorn, 2010). During the course of the twentieth century, the development of the community college was led by several societal factors, including the industrial revolution and the drive for social equality (Crisp & Mina, 2012). As community colleges expanded across the United States, they came to serve "common individuals" and not the elite (Hagedorn, 2010). Early community colleges focused on providing the first two years of coursework to students seeking to transfer to a four-year college or university (Crisp & Mina, 2012). However, following the Civil Rights Movement, the Women's Movement, and the baby boom, community colleges grew in enrollment and diversified their courses and program offerings (Crisp & Mina, 2012). Today, the function and mission of community colleges vary by institution and state (Hagedorn, 2010). However, most community colleges share a common mission of providing not only vocational training or workforce development, but also liberal arts instruction at the lower division college level that students may use to apply to transfer to a college or university offering a bachelor's degree (Hagedorn, 2010). Another commonality among community colleges is the goal of serving the educational needs of students living in close proximity to the college's geographic service location (Ayers, 2002; Hagedorn, 2010). In the majority of states, there's a community college within 50 miles of most individuals (Townsend, 2007). In

order to serve the needs of students with varying educational goals and varying academic levels, community colleges have a broad mission of extending educational opportunity under an “open-door” admissions policy at a low cost (Cohen & Brawer, 2008). For students with a weak academic record, community colleges may be the only low-cost, convenient institution that will accept them (Townsend, 2007).

Community College Student Characteristics

Since its inception, the community college has seen exceptional growth (Hagedorn, 2010). Today there are 1,113 community colleges across the United States that serve 45% of all undergraduate students, or 7.7 million students (AACC, 2014). The growth of community colleges has accelerated due to several factors: a steady growth of students aspiring to attend college; larger proportions of high school graduates pursuing higher education; nontraditional students returning to postsecondary education; traditionally underrepresented students pursuing postsecondary education; increased college aspirations of women; and growth in the job market requiring higher levels of education and training (Hagedorn, 2010). Although some four-year colleges have expanded enrollment to meet the growth in students pursuing post-secondary education, they have not grown in proportion to the increased demand in postsecondary education, nor have they altered admissions criteria to accommodate diverse college aspirants (ACT, 2002; CollegeBoard, 2009; Hagedorn, 2010; Washington Higher Education Coordinating Board, 2009).

One of the biggest challenges of community colleges is serving students from traditionally underserved populations and students who would not otherwise have the opportunity to attend college (Crisp & Mina, 2012; Hagedorn, 2010). More often than not, community college students are poorer, non-white, less academically apt, less ambitious, less

likely to attend full-time, and in need of assistance developmentally, academically, and socially than are students who begin at a four-year college (Crisp & Mina, 2012; Dougherty, 1992). More than half of current community college students attend part-time—59% (AACC, 2014). In addition, 61% of community college students are women (AACC, 2014). More than half of community college students are employed, compared with only 37% of four-year college students (Goldrick-Rab; 2010). By offering accessibility to often-marginalized groups, community colleges assist in closing performance gaps among underrepresented populations (Berger & Lyon, 2005). Community colleges are vehicles for social mobility because they provide educational services that can improve cognitive skills and study habits, and offer a solid foundation for the successful completion of postsecondary education (Price, 2004).

Although community colleges provide access to students who may not have otherwise attended postsecondary education, emphasis is often placed on student enrollment instead of completion (Goldrick-Rab, 2010). It often takes community college students longer to obtain any credential (Goldrick-Rab, 2010; Mullin, 2011). After three years, only 16% of first-time community college students who began college in 2003 attained a certificate, associate's degree, and/or bachelor's degree; 40% were still enrolled (Goldrick-Rab, 2010). Completion rates improve when students are given longer periods of time to complete a degree or credential (Attewell, & Lavin, 2007; Goldrick-Rab, 2010).

Low-Income Community College Students

Although there are several persistence theories that consider students' socioeconomic background or income level on degree completion, few studies specifically consider transfer and bachelor's degree attainment of low-income community college beginners. There is

research that suggests being low-income in conjunction with community college attendance impedes degree completion. An Engle and Tinto (2008) study showed that 63% of low-income community college students said they planned to earn a bachelor's degree. However, only five percent of these same students actually earned a bachelor's degree within six years (Engle & Tinto, 2008). Low-income students disproportionately come from ethnic and racial minority backgrounds with lower levels of academic preparation (Engle & Tinto, 2008). Low-income community college students also tend to be older, less likely to receive financial support from parents, and more likely to have multiple obligations outside of college, such as family and work, that limit their full participation in the college experience (Engle & Tinto, 2008).

In addition, Davidson (2013) notes that low-income community college students secure less financial aid, fewer scholarships and other grants than do students who begin their college career at a four-year institution. Lack of sufficient financial aid can pose a great hardship for low-income students. However, receiving aid may influence persistence decisions of low-income community college beginners. Dowd and Coury (2006) found that when low-income community college beginners took out loans in the first year, this had a negative effect on persistence to the second year. As students assess their ability to complete college work and the prospects of future financial return, those with loans will become dissatisfied with their college investment and withdraw (Dowd & Coury, 2006). Dowd and Coury (2006) also found that grants and work study had no significant effects on persistence or degree completion for low-income community college beginners. However, Attewell, Heil, and Reisel (2011) came to different conclusions on the impact of financial aid for

community college beginners. They found that more financial aid helped community college students' degree attainment.

Low-income community college beginners face several unique barriers that may prevent them from eventually completing a bachelor's degree (Cabrera et al., 2012). However, background characteristics, support received in high school, academic resources acquired prior to college, degree attainment aspirations, pathways to and through college, college experiences, financial aid, and parental responsibilities have been known to influence transfer and degree completion of low-income community college beginners (Cabrera et al., 2012).

Student Experiences in the Community College

There are few empirical studies about the applicability of persistence models to community college transfer students, and even fewer studies that have examined the relevance of academic and social integration to the degree attainment of transfer students (Townsend & Wilson, 2009). Traditional persistence theories such as Tinto's Theory of Student Departure (1975, 1993) or Astin's Student Involvement Theory (1985) are largely based on research involving traditional-age students attending residential four-year institutions (Wild & Ebbers, 2002). While such research is often assumed to be applicable to community college students, it has been applied with mixed results (Deil-Amen, 2011; Shuetz, 2005). To date, persistence theory has not been able to fully address the diversity of students found at community colleges (Karp, 2011), the community college experience, or the community college context (Crisp & Mina, 2012).

There are apparent differences in the student experience between students who begin at two-year colleges and those that begin at a four-year colleges. Unlike students at four-year

institutions, the majority of the community college experience occurs inside the classroom, as community college students are typically only on campus immediately before, during and after class (Barnett, 2010). This, in turn, may stifle community college students' opportunities to become socially and academically integrated or have any high level of involvement on campus (Crisp & Mina, 2012) leading to lack of transfer among community college beginners.

Factors Contributing to Transfer and Degree Attainment Among Community College Students

In spite of the accessibility to higher education, students who begin at community colleges are less likely to attain a bachelor's degree (Dougherty & Reid, 2007; Hagedorn, 2010). As opposed to demonstrating what has led to bachelor's degree attainment of community college beginners, much of the literature describes the barriers to degree attainment of community college students. While approximately two-thirds of community college students expect to transfer and earn a bachelor's degree, most do not (Dougherty & Kienzl, 2006). In their 2005 study, Pascarella and Terenzini concluded that students seeking a bachelor's degree who begin their college careers in a two-year public college continue to be at a disadvantage in reaching their educational goals, compared with similar students entering a four-year college or university. If students continue to upper division coursework, Dougherty describes institutional obstacles of transfer students. Many four-year colleges do not admit transfer students, either because of reluctance or because there is no room in the institution (Dougherty, 1992; Goldrick-Rab, 2010). Many institutions are also reluctant to award transfer credit for courses taken at other institutions (Dougherty, 1992; Goldrick-Rab, 2010).

Fully understanding the factors that contribute to the successful transfer and bachelor's degree attainment of community college beginners is a challenge. Hagedorn (2010) is hesitant to conclude that the attendance at a community college is the cause of non-success of transfer and bachelor's degree attainment. Statistical controls cannot account for the fact that a majority of community college students who do not transfer or earn a bachelor's degree did not have the option of attending a four-year university (Hagedorn, 2010). Admissions offices at four-year institutions employ criteria that reject applications of those students most likely to fail at their institutions (Hagedorn, 2010). Therefore, many of these students could not attend a four-year university, leaving attendance at a community college the only option (Cohen & Brawer, 2008). Hagedorn (2010) also points out that previous studies fail to acknowledge students who, despite being denied admission to a four-year college, attend a community college and are ultimately successful in transferring and earning a bachelor's degree. If not for the open admission policy at community colleges, these students may have been denied access to postsecondary education (Hagedorn, 2010). Previous research has also not accounted for students that may have been admissible to a four-year institution, but because of environmental factors that may require them to attend college part-time, or attend a less expensive college, choose to enroll in community colleges (Hagedorn, 2010).

Although attending community college may impact transfer and subsequent bachelor's degree attainment, there are some students who are able to successfully transfer and complete a bachelor's degree after first attending a community college. Several studies have considered how background characteristics (age, race/ethnicity, gender, parents' education) may influence successful transfer and bachelor's degree attainment. Wood,

Nevarez, and Hilton (2012) used Tinto's (1975;1993) and Bean and Metzner's (1985) models of student retention and nontraditional student attrition to determine that community college students who are older students or first in their families to attend college were less likely to transfer. In contrast, Mamiseishvili and Deggs (2013) found that being female positively contributed to continued enrollment, transfer, or completion of an associate's degree for low-income community college beginners. In addition, Mamiseishvili and Deggs (2013) found that compared to African American students and Asian students, Hispanic students were more likely to transfer and complete an associate's degree, while African American students were less likely to transfer and complete an associate's degree. Porchea, Allen, Robbins, and Phelps (2010) also found that community college students with at least one parent with a bachelor's degree were more likely to transfer and earn a bachelor's degree.

In addition to background characteristics, there is research that has demonstrated how academic factors including high school performance, enrollment intensity, and educational goals have influenced successful transfer and bachelor's degree attainment. Wood et al. (2012) found that prior high school academic performance was significantly predictive of transfer. Considering the factors that led to successful degree attainment of Hispanic community college beginners, Arbona and Nora (2007) found that students with strong high school academic achievement were more likely to transfer and eventually earn a degree. Porchea et al. (2010) also found that higher academic preparation in high school predicted transfer and degree attainment. Research on enrollment intensity indicates that students who attend full-time are more likely to transfer. Both Mamiseishvili and Deggs (2013) and Porchea et al. (2010) found that attending community college full-time positively increased the likelihood of transfer. Lastly, educational goals have been found to influence transfer and

bachelor's degree attainment. Mamiseishvili and Deggs (2013) found that degree expectations at the beginning of college positively contributed to transfer and completion of an associate's degree for low-income community college beginners. Moreover, Arbona and Nora (2007) found that students with high educational aspirations towards a bachelor's degree were more likely to attain a bachelor's degree. Porchea et al. (2010) also found that students who expected to earn at least a bachelor's degree were associated with greater likelihood of transfer and earning a bachelor's degree.

Environmental factors such as finances, employment, and family responsibility are additional influences on transfer and degree attainment. In their 2011 study, Attewell, Heil, and Reisel found that receiving financial aid can predict degree attainment. McKinney and Burrige (2013) found that borrowing loans during the first year of community college had positive effects on persistence after the first year, but had a negative effect on persistence decisions three and six years after initial enrollment. In addition to finances, work and family responsibilities also influence transfer and degree attainment. Wood et al. (2012) found that working and having dependents were strong predictors of transfer. Attewell et al. (2011) also found that working positively predicted degree attainment.

Lastly, experiences students have while in college also influences transfer and degree attainment. In particular, academic and social integration can have varying influences on transfer and degree attainment. Wood et al. (2012) found that greater levels of academic and social integration were positively associated with transfer. Mamiseishvili and Deggs (2013) also found that academic integration also positively contributed to transfer or completion of an associate's degree. When considering academic integration, Barnett (2011) found that faculty validation predicts a stronger sense of academic integration. Higher levels of faculty

validation modestly predict increases in community college students' intent to persist.

Porchea et al. (2010) found that students' commitment to college and social activity were significant predictors of transfer and degree attainment. In addition to academic and social integration, grades earned while in college can predict transfer and degree attainment.

Mamiseishvili and Deggs (2013) found that first-year grades positively contributed to transfer or completion of an associate's degree. Wang (2009) found college GPA to be the best predictor of bachelor's degree attainment among community college beginners.

Each of these studies demonstrates how background characteristics, academic factors, environmental factors, and college experiences influence transfer and degree attainment of community college beginners. However, other than Mamiseishvili and Deggs (2013), none of these studies considers experiences specific to low-income students in determining the factors that contribute to transfer and degree attainment of community college beginners. And while Mamiseishvili and Deggs (2013) consider transfer of low-income community college beginners, their study does not extend to bachelor's degree attainment of community college beginners. Most of these studies draw on interactional theories and fail to consider how students' response to price and aid may influence transfer and degree attainment. While Attewell et al. (2011) consider the influence of financial aid on degree attainment, their study fails to consider low-income students exclusively. In addition, Attewell et al. (2011) did not disaggregate degree attainment to attribute the specific factors that contribute to bachelor's degree attainment versus associate's degree attainment.

Summary

Since their inception, community colleges have provided access to higher education for students who did not traditionally have access to postsecondary education. Community

colleges serve diverse students for diverse purposes. However, community college research has indicated that community colleges divert students from transferring and earning a bachelor's degree. Although low numbers of community college beginners are successful in transferring and attaining a bachelor's degree, prior research has suggested that background characteristics, environmental factors, academic factors and college experiences influence degree attainment. In particular, age (Wood et al., 2012); race/ethnicity (Mamiseishvili & Deggs, 2013); gender (Mamiseishvili & Deggs, 2013); parents' education (Porchea et al., 2010); high school preparation (Arbona & Nora, 2007; Porchea et al., 2010; Wood et al., 2012); enrollment intensity (Mamiseishvili & Deggs, 2013; Porchea et al., 2010); educational goals (Arbona & Nora, 2007; Mamiseishvili & Deggs, 2013; Pochea et al., 2010; Wang, 2009); financial aid (Attewell et al., 2011); employment (Wood et al., 2012); family responsibilities (Wood et al., 2012); interaction with faculty (Barnet, 2011; Mamiseishvili & Deggs, 2013; Nippert, 2000; Wood et al., 2012); social interaction (Porchea et al., 2010; Wood et al., 2012); and college GPA (Nippert, 2000; Mamiseishvili & Deggs, 2013; Wang, 2009) influence transfer and bachelor's degree attainment.

Theoretical Frameworks

This study considered how the integration of the financial nexus model and Bean and Metzner's model of nontraditional student attrition predict transfer and degree attainment. This section details the variables found in each model and how specific predictors from the financial nexus model and Bean and Metzner's model are included in the present study. In addition, this contains a review of previous studies that have used the financial nexus model or Bean and Metzner's model to explain student persistence decisions. While other studies have used the financial nexus model and Bean and Metzner's model of nontraditional student

attrition to explain persistence decisions, prior research does not consider how these theoretical frameworks explain transfer and degree attainment of low-income community college beginners.

Financial Nexus Model

College costs and the availability of financial aid have an influence on a student's decision to enroll in college (St. John, 1990) and eventual persistence decisions (St. John, Paulsen, and Starkey, 1996). The financial nexus between choice and persistence (Paulsen & St. John, 1997, 2002; St. John et al., 1996; St. John, 2000) considers how college choice is influenced by financial factors. St. John, Paulsen, and Starkey (1996) found that the perceptions students hold about affordability have a sustained influence on subsequent persistence decisions. The financial nexus between college choice and persistence requires the consideration of how two sets of factors influence persistence: (1) students' perceptions of financial factors, such as the availability of low tuition or high aid, that students view as very important at the time of their initial college choice decisions; and (2) measures of the dollar amounts of financial variables (e.g., tuition, aid, living costs) that students actually experience at the time of subsequent persistence decision (Paulsen & St. John, 2002). If students consider costs to be important in their choice of college, such cost-consciousness may have a direct impact on subsequent persistence decisions (Paulsen & St. John, 2002). In this model, important consideration is given to expectations, perceptions, and reality. Students expect to pay a certain amount and are drawn to a university because of that expectation. If a student later perceives the actual costs to be higher, the same process used to choose an institution may be used to depart from an institution.

An attribute of the financial nexus between choice and persistence is its inclusiveness. The financial nexus between choice and persistence provides evidence that there are patterns of choice, in particular by social class, and that financial conditions in higher education have differential effects across social classes (Paulsen & St. John, 2002). Paulsen and St. John relate Bourdieu's habitus construct to the financial nexus model. Students' habitus operates to implicitly frame, constrain, and inform the patterns of students' response to financial factors (Paulsen & St. John, 2002). Because changes to federal student aid policy are problematic for low-income students (Carnevale & Rose, 2004; Dynarski, 2002; Heller & Rasmussen, 2002), students' social class, cultural capital, and habitus influence students' cost-consciousness and conception of financial issues as part of the college choice process (McDonough, 1997). Research has shown that low-income and community college students are more sensitive to college costs than more affluent four-year college attendees (Beattie, 2002; Heller, 1997; Leslie & Brinkman, 1988; Terenzini et al., 2001). Given this sensitivity to cost, the financial nexus model is a good model to consider the role of finances in college choice and degree attainment among low-income community college beginners.

A major set of variables considered in the financial nexus model include student perceptions and expectations about college costs. Paulsen and St. John (2002) considered how fixed costs related to choice of college. Within the BPS data, measurement of students' college choice is based on the perception that the college was affordable and provided financial aid. In addition to perceptions about costs, Paulsen and St. John (2002) examined how fixed costs set by the institution and living costs controlled by the student influenced persistence. By adding these additional variables to the model, a better understanding of how actual dollar amounts of tuition, aid, and living costs interact with students' perceptions

about college costs when choosing to attend college and making the decision to persist through graduation was determined.

In addition to cost consciousness, most finance studies incorporate measures of other variables, such as demographic, socioeconomic, academic, and collegiate experiences to determine the effects of finances on persistence (Walpole, 2007). Both Paulsen and St. John (2002) and Hwang (2003) used several other variables to determine how demographics, socioeconomic status and college performance interacted with the financial nexus model. Race/ethnicity, parent's education, gender, and age were relevant demographic variables in Paulsen and St. John's study.

Prior academic experience has also been shown to be a strong predictor of degree completion. Academic preparation such as standardized test scores and high school grades have consistently been shown to be among the strongest predictors of degree attainment among undergraduates (Adelman, 2006; Astin, 1993; Astin, Tsui & Avalos, 1996; Astin & Oseguera, 2003, 2005; Attewell et al., 2011; Pascarella, Smart & Ethington, 1986; Stoecker, Pascarella & Wolfe, 1988). Paulsen and St. John (2002) also considered prior academic experience in high school. However, they also took into consideration whether students earned a high school diploma or general equivalency diploma. Given the strength of standardized test scores, such as the SAT or ACT, and high school grades in prior persistence literature, this study used standardized test scores and high school grades in the model. While most two-year colleges have open access admission that does not require standardized test scores, inclusion of standardized test scores in this model may inform how test scores influence degree attainment.

Paulsen and St. John (2002) used several variables to consider college experience; this study considers the interaction students have with faculty as well as student involvement in activities. In addition, Paulsen & St. John (2002) discuss grades as a college experience. Because academic performance early in a student's college career has proven to be a strong predictor of degree attainment (Pascarella & Terenzini, 1991, 2005; Adelman, 2006), this study focused on the first semester GPA of the study participants.

Lastly, Paulsen and St. John (2002) considered the influence of degree aspirations on persistence decisions. While this study specifically considers those students who attained a bachelor's degree, comparing the changes in degree aspirations from the time students first enrolled in postsecondary education to two years after initial enrollment may inform the literature on how degree aspirations predict degree attainment.

This study explores how the financial nexus model predicts transfer and attainment. Current studies using the financial nexus model (Hwang, 2003; Paulsen & St. John, 1997, 2002; St. John et al., 2000; St. John et al., 2005) consider how the model predicts persistence, but not transfer or attainment. Previous research has also not explored the effects on transfer and attainment of low-income students' decision to initially attend a community college for postsecondary education. Felts (2008) modified St. John, Paulsen, and Starkey's (1996) financial nexus model to consider how the choice to attend a four-year college versus a two-year college influenced persistence. Using two-group path analyses, she found that transfer GPA, transfer hours, completion of college algebra, completion of freshman English, and first semester GPA had a positive effect on baccalaureate attainment for community college transfer students. However, her study did not specifically consider low-income community college students.

Bean and Metzner's Model of Nontraditional Student Attrition

Several interactional models have been formulated to explain student departure. Interactional models view student departure as a function of both individual and organizational factors, by focusing on individuals' experiences in the total culture or environment of an institution (Saunders, 2004). As opposed to many other interactional theories that focus on social integration of traditional students, (Spady, 1970; Astin, 1975; Tinto, 1975, 1993; Pascarella, 1980) Bean and Metzner's (1985) model of nontraditional student attrition focuses on other factors that contribute to persistence of nontraditional students. According to Bean and Metzner (1985), it is necessary, but not sufficient, for nontraditional students to exhibit at least one of three characteristics (part-time, commuter, or older than 24). Their conceptual model takes into consideration that nontraditional students are rarely socially integrated with their institutions (Morrison & Silverman, 2012). For nontraditional students, dropout decisions are based on four sets of variables: academic, background, psychological, and environmental (Bean & Metzner, 1985). For nontraditional students, Bean and Metzner (1985) emphasized the role environmental variables play in dropout decisions.

In Bean and Metzner's (1985) model, academic variables referred to study habits, academic advising, absenteeism, major certainty, and course availability. Bean and Metzner (1985) hypothesized that students with poor study habits were more likely to depart than students with strong study habits. Similarly, students who were more often absent were more likely to drop out than students who attended class (Bean & Metzner, 1985).

In their model, Bean and Metzner also considered background variables. Bean and Metzner included background variables not only because they appear in most models of

student attrition (Bean, 1980; Pascarella, 1980; Spady, 1970; Tinto, 1975), but because past behavior predicts future behavior (Bean & Metzner, 1985). Bean and Metzner (1985) predicted that students with strong high school grade point averages were more likely to persist than those with lower grade point averages. In addition, students with greater aspirations for their educational goals were more likely to persist than students with lesser educational aspirations (Bean & Metzner, 1985).

Another set of variables in Bean and Metzner's (1985) model included the psychological variables of utility, satisfaction, goal commitment, and stress. Negative psychological outcomes such as low levels of utility, satisfaction, goal commitment, or high levels of stress cause students to drop out despite high grade point averages (Bean & Metzner, 1985). Bean and Metzner (1985) posited that positive psychological outcomes compensate for low levels of academic success, while high levels of academic success only result in continued persistence when accompanied by positive psychological outcomes from school.

The last set of variables in Bean and Metzner's model includes environmental variables. Of all of the variables, Bean and Metzner (1985) emphasized the effect of environmental variables in dropout decisions. Environmental variables consist of finances, hours of employment, outside encouragement, family responsibilities, and opportunity to transfer (Bean & Metzner, 1985). Bean and Metzner (1985) posited that when environmental factors impeded on nontraditional students' time (e.g., lack of child care or long work schedules), but students still maintained academic achievement (e.g., high grade point average and strong advising), students were more likely to drop out. Students with strong environmental support, but weak academic support, were more likely to persist (Bean &

Metzner, 1985). Based on their model for nontraditional students, environmental support compensates for weak academic support, but academic support will not compensate for weak environmental support (Bean & Metzner, 1985).

In their 1992 study, Virginia Stahl and D. Michael Pavel assessed Bean and Metzner's model with community college students. For their particular study, Stahl and Pavel (1992) were unable to find a goodness of fit using the exact Bean and Metzner variables when applied to community college students. Their model revised Bean and Metzner, retaining many of the variables introduced in the earlier model, but suggesting different associations by exploratory factor analysis (Stahl & Pavel, 1992).

The most noticeable difference from Bean and Metzner is the removal of the demographic variables of age, gender, ethnicity, and residence (Stahl & Pavel, 1992). Stahl and Pavel (1992) note the importance of these student subgroups, however, they found it is best not to co-mingle the effects of demographic variables with the model's other variables. Stahl and Pavel's (1992) intent in regrouping Bean and Metzner's (1985) variables was to develop a model that assesses the relative strength of the individual variables in the model in accounting for retention. They found several variables to positively contribute to community college student persistence: cumulative GPA, semester GPA, satisfaction, intent to transfer, utility, study habits, intent to re-enroll, advisement, finances, transfer difficulty, absences, goal commitment, encouragement, stress, available courses, family responsibility, major certainty, and employment (Stahl & Pavel, 1992).

More recent studies have considered how variables included in Bean and Metzner's (1985) model influence transfer and degree attainment of community college beginners. Attewell, Heil, and Reisel (2011) considered the successful educational outcomes of

community college beginners six years after enrollment. Their study considered earning an associate's degree a successful outcome and did not consider bachelor's degree attainment in isolation. Using BPS data, they found that income, financial aid, integration, and work were significant predictors of graduation with either an associate's degree or a bachelor's degree. Mamiseishvili and Deggs (2013) considered the educational outcomes of low-income community college beginners three years after initial enrollment. Also using BPS data, Mamiseishvili and Deggs (2013) found that being female, being Hispanic (compared to other African Americans and Asians), GPA, academic integration, enrollment intensity, and degree expectations significantly and positively contributed to persistence and completion of an associate's degree. While both of these studies consider community college beginners, Attewell et al. (2011) do not specifically consider how these factors contribute to the transfer and degree attainment of community college beginners. And while Mamiseishvili and Deggs (2013) consider low-income community college beginners, their study stops at considering transfer and associate's degree completion of this particular population. My study extends the literature in considering low-income community college beginners and their path towards transfer and bachelor's degree attainment.

Summary

This chapter reviewed literature that pertains to the transfer and degree attainment of low-income community college beginners. The first section provided context about low-income college students, community colleges and low-income community college students, and factors contributing to transfer and degree attainment of community college beginners generally and low-income community college beginners specifically. The chapter included a

general discussion of the financial nexus model and Bean and Metzner's model of nontraditional student attrition.

This chapter outlined the many challenges students from low-income backgrounds must overcome on their path to bachelor's degree attainment. Community colleges continue to provide access to postsecondary education for students from low-income backgrounds. However, previous studies have demonstrated that low-income students that begin their postsecondary education at community colleges are less likely to transfer and attain a bachelor's degree. While no previous studies have considered the likely causes of successful transfer and degree attainment of low-income community college beginners from the perspective of the financial nexus model and Bean and Metzner's (1985) model of nontraditional student attrition, other studies have been informative on factors that may lead to transfer and degree attainment. The section on factors contributing to transfer and degree attainment discussed how demographic characteristics, academic factors, environmental factors, and college experiences may contribute to transfer and degree attainment. This study builds on and expands previous research on the transfer and degree attainment of low-income community college beginners. It further extends previous research by examining the relationships between demographic factors (age, race/ethnicity, gender, parents' education), academic factors (high school performance, enrollment intensity, educational goals), environmental factors (finances, employment, family responsibilities), and college experiences (academic integration, social integration, first year cumulative GPA).

The research questions that guided this study were based on the interaction of factors from the financial nexus model and a modified Bean and Metzner model to examine the transfer and degree attainment of low-income community college students. Chapter Three

provides additional details regarding the methodology of this study and a proposed model of degree attainment based upon this literature review.

CHAPTER THREE

METHODOLOGY

In this study, the transfer and baccalaureate degree attainment of low-income students who began their postsecondary education at community colleges was examined using the *Beginning Postsecondary Students Longitudinal Study 04/09* (BPS: 04/09) database, a large, nationally representative longitudinal database. The purpose of this study was to identify the demographic characteristics, academic factors, environmental factors, and college experiences that predict transfer and bachelor's degree attainment of low-income community college beginners. The research questions addressed were the following:

1. What are the effects of demographic characteristics, academic factors, environmental factors, and college experiences on transfer of low-income community college beginners?
2. What are the effects of demographic characteristics, academic factors, environmental factors, and college experiences on degree attainment of low-income community college beginners?

By understanding factors that contribute to bachelor's degree attainment, practitioners may better advise and support low-income community college beginners. In addition, policymakers may be better informed about appropriate financial aid policies.

Data Collection

The data for this study was drawn from the *Beginning Postsecondary Students Longitudinal Study 04/09* (BPS: 04/09). During the 2003–04 academic year, approximately 4 million undergraduates began postsecondary education for the first time. These students enrolled in various institutions, including four-year colleges and universities, public two-year

community colleges, and private for-profit institutions (Berkner & Choy, 2008). The BPS: 04/09 study includes survey results from a sample of these first-time beginning students. The sampled students were surveyed in 2004 at the end of their first year in postsecondary education. Students received follow-up surveys in 2006, three years after beginning postsecondary education, and then again in 2009, six years after beginning postsecondary education. The initial survey in 2004 was administered as part of the 2003–04 National Postsecondary Student Aid Study (NPSAS: 04) (Berkner & Choy, 2008). NPSAS: 04 is a nationally representative sample of about 90,000 undergraduate, graduate, and first-professional students in about 1,600 postsecondary institutions in the United States and Puerto Rico that are eligible to participate in the federal Title IV student financial aid programs (Berkner & Choy, 2008). Only students enrolled in an academic program; students enrolled in at least one course for credit that could be applied towards fulfilling the requirements for an academic degree; or students enrolled in an occupational or vocational program that led to a degree, certificate or other formal award were eligible to participate in the NPSAS: 04 survey (Wine, Janson, & Wheelless, 2011). Students concurrently or solely enrolled in high school or General Educational Development (GED) programs or other high school completion programs were not eligible to participate in NPSAS:04 (Wine et al., 2011).

The sampling procedure for NPSAS: 04, the base year study for BPS: 04/09, was a two-stage design in which eligible institutions were selected in the first stage, and eligible students within the eligible responding sample institutions were selected in the second stage (Wine et al., 2011). The institution sampling frame for NPSAS: 04 was created using the 2000–2001, 2001–2002 and 2002–2003 Integrated Postsecondary Education Data System

(IPEDS) Institutional Characteristics files and the 2000 and 2001 Fall Enrollment files (Wine et al., 2011). Institutions that were missing data or had unusually large or small enrollments were excluded from the sampling frame (Wine et al., 2011). Using the sampling frame, a direct un-clustered sample of institutions was selected for NPSAS: 04 (Wine et al., 2011). The number of public two-year, public four-year, and private nonprofit four-year institutions in 12 states—California, Connecticut, Delaware, Georgia, Illinois, Indiana, Minnesota, Nebraska, New York, Oregon, Tennessee, and Texas—were oversampled to allow for analysis of the effects of state tuition and student aid policies in these states. 1,670 institutions were sampled, of which 1,630 were eligible to be included in the NPSAS survey (Wine et al., 2011). Out of the 1,630 eligible institutions, 1,360 or 84% provided student enrollment lists (Wine et al., 2011).

Student information was gathered in the second stage of the sampling design for NPSAS:04. In order to keep the probabilities of selection equal across student type within the institution type, the NPSAS:04 student sampling design was based on fixed-type sampling rates, rather than fixed-type sample sizes (Wine et al., 2011). A total of 109,210 undergraduate, graduate, and first-professional students were selected for the NPSAS:04 student sample (Wine et al., 2011). There were 49,410 potential first-time beginning undergraduates within the sample (Wine et al., 2011). After verifying NPSAS:04 eligibility, a total of 44,670 first-time beginning undergraduates were sampled for NPSAS:04 (Wine et al., 2011). For the first follow-up study, 23,090 NPSAS:04 respondents were identified as first-time beginners and became the sample for the first follow-up study for BPS: 04/06 (Wine et al., 2011). After a review of the first follow-up sample, it was determined that 4,450 cases

were ineligible and removed from the sample (Wine et al., 2011). The second follow-up study (BPS: 04/09) included a sample size of 18,640 cases.

Data for BPS: 04/09 were collected using many sources, including student interviews, student records, information from Integrated Postsecondary Education Data System (IPEDS), Central Processing System (CPS), National Student Loan Data System (NSLDS), SAT, ACT, National Student Clearinghouse (NSC), student transcripts, and college catalogues (Radford and Berkner, 2010). Data collected through these sources included information on student school, work and home experiences, financial information, and parent and family characteristics and support.

Participants

Of the 49,410 first-time beginning students within the NPSAS: 04 survey, 45,060 students responded for an un-weighted response rate of 91.2 and a weighted response rate of 91.4. In the first follow-up (BPS: 04/06), of the 23,090 students included in the sample, 14,900 students responded resulting in an un-weighted response rate of 80% and a weighted response rate of 77% (Horn, 2009). Lastly, in the second follow-up (BPS: 04/09), of the 18,640 students included in the sample, 16,120 students responded for a response rate of 86.5%.

For this study, only low-income students initially enrolled in a community college in the fall of 2003 with the intentions of transferring to another college and/or earning a bachelor's degree were included. For students in the sample, low-income status was based on the income of parents for dependent students and the income of the student (and spouse) for independent students. Dependent students whose parents earned less than \$32,000 annually and independent students who earned less than \$12,000 annually were included in the study.

In addition to considering income, students' entry intentions of transfer or bachelor's degree attainment were also considered. Only students who indicated their intent to either transfer or earn a bachelor's degree were included in my final sample. My final sample included 1,010 low-income students who began at a community college with intentions to transfer or complete a bachelor's degree. The data was examined and cleaned for missingness.

Observations missing necessary variables were removed using listwise deletion. The final analyzed sample with all variables of interest ($n = 550$) included 340 female students and 210 male students. The median age of the sample was 20.27. 220 students identified as white, 150 students identified as black, 110 students identified as Hispanic, 40 students identified as Asian, and 30 students identified as "other".

Sampling Weights

Because of the movement of students in and out of higher education (resulting in different student populations for each study year) sample weights are used. Using sample weights allows researchers to make generalizations to the national population represented in BPS: 04/09. BPS: 04/09 weights compensate for unit nonresponse during data collection (Radford & Berkner, 2010). The BPS: 04/09 weights were derived from the BPS: 04/06 and NPSAS:04 weights because the BPS: 04/09 sample is a subset of the BPS: 04/06 sample, and the BPS: 04/06 sample is a subset of the NPSAS:04 sample (Radford & Berkner, 2010). Various weights were developed for analyzing BPS: 04/09 data collection. One weight analyzed sample members who were study respondents for BPS: 04/09. A second panel weight was developed for analyzing records of sample members who were considered respondents for the base-year study, first follow-up and second follow-up. A last weight was developed for analyzing cases with transcript data. Each of the weights was adjusted for

nonresponse (Wine et al., 2011). To ensure proper weights were applied to this study, each sample used normalized weight variables based on the BPS weight variable WTB000.

Statistical Model

Many factors may contribute to a student’s transfer and subsequent earning of a bachelor’s degree within six years of the start of postsecondary education. Adapted from previous tests of the financial nexus model of college choice and persistence (St. John et al., 2005) and Bean and Metzner’s (1985) model of attrition, this study examined a model that predicts transfer and degree attainment of low income students who began their postsecondary education at a community college. The *Beginning Postsecondary Students Longitudinal Study* presents a unique chance to study persistence and degree attainment by using a large, national sample with an extensive set of variables. The dependent variables were whether a student transferred or not three years after initial enrollment and whether a student attained a bachelor’s degree or not six years after initial enrollment. The independent variables fall into one of four categories (1) demographic characteristics; (2) academic factors; (3) environmental factors; and (4) college experiences. Table 3.1 lists the variables used in the model and how each was operationalized.

Table 3.1 List of Variables

Variables	Categories	Coding Description
<u>Dependent Variables</u>		
Transferred	Transferred to 4-year school by 2006	0 = no; 1 = yes
Bachelor’s Degree	Attained bachelor’s degree by 2009	0 = no; 1 = yes
<u>Independent Variables</u>		
Demographic Characteristics		
Age	Age in years as of 12/31/03	Continuous and grand mean centered

Table 3.1 Continued

Gender	Male	0 = no; 1 = yes
Race	Black Hispanic Asian Other White	0 = no; 1 = yes 0 = no; 1 = yes 0 = no; 1 = yes 0 = no; 1 = yes Reference
Parents' Education	Bachelor's degree	0 = no; 1 = yes
Academic Factors		
High School GPA	A/B Student	0 = no; 1 = yes
Standardized test scores	SAT or ACT equivalent	Continuous and grand mean centered
Enrollment Intensity	Enrolled Full-time	0 = no; 1 = yes
Highest degree expected	Bachelor's degree	0 = no; 1 = yes
Environmental Factors		
Reason to Attend	Cost a reason to attend institution	0 = no; 1 = yes
Loan Amount	Units of \$1,000	Continuous, centered
Grants	Units of \$1,000	Continuous, centered
Employment	Worked full-time Worked part-time Did not work	0 = no; 1 = yes 0 = no; 1 = yes Reference
Family responsibilities	Have dependents/married	0 = no; 1 = yes
College Experiences		
Academic Integration	Composite BPS variable ¹	Continuous and grand mean centered
Social Integration	Composite BPS variable ²	Continuous and grand mean centered
Grades	Cumulative GPA	4-point scale x 100; Centered

¹The academic integration index composite variable is derived from the average of the responses indicating how often students participated in study groups, had social contact with faculty, met with an academic advisor, or talked with faculty about academic matters outside of class during the 2003–04 year.

²The social integration index composite variable is derived from the average of the responses indicating how often students had attended fine arts activities, participated in intramural or varsity sports or participated in school clubs during the 2003–04 year.

Dependent Variables

There were two dependent variables in this study. Both variables are dichotomous variables. The first dependent variable indicated whether a student successfully transferred to a four year college three years after initial enrollment. This dependent variable was dummy coded to equal one if a student transferred to a four year college and zero if otherwise. The second dependent variable indicated whether a student attained a bachelor's degree within six years of initial postsecondary enrollment or not. This dependent variable was dummy coded to equal one if a student attained the bachelor's degree and zero if otherwise.

Demographic Characteristics

Prior studies have considered how student demographic variables may influence persistence decisions, including transfer and degree attainment. Demographic variables used in this study were age, gender, race/ethnicity, and parents' education level.

In Bean and Metzner's (1985) model of nontraditional student attrition, age was an important factor in their model. Non-traditionally aged transfer students are less likely to earn a bachelor's degree compared to traditionally aged transfer students (Schmidtke & Eimers, 2004). More recently, Wood et al. (2012) found age influences transfer. In particular, in their study older students were less likely to transfer (Wood et al., 2012). Within BPS, student age is reported as of 12/31/2003. Age was included as a continuous variable and grand mean centered for ease of interpretation of the resulting regression coefficient.

Results have been mixed related to the influence of gender on persistence decisions. Pascarella et al. (1983) found that men were less likely to persist. However, Twombly's (1993) review of the literature between 1970 and 1989 indicated that there were few

significant differences between men and women in persistence. Mullen and Eimers (2001) found that female transfer students are more likely to earn a bachelor's degree than male transfer students and, more recently, Mamiseishvili and Deggs (2013) found that female low-income community college beginners were more likely to transfer or complete an associate's degree than male students within three years of enrollment to a community college. In this study, gender was coded as a dichotomous variable (0 = female; 1 = male).

Several studies have considered the influence of race/ethnicity on persistence decisions. Prior research has indicated that community colleges with higher proportions of Hispanic and African-Americans had lower transfer success than institutions with higher percentage of Asian Americans (Wassmer, Moore, & Shulock, 2004). Schmidtke and Eimers (2004) found that minority students who transferred from community colleges were less likely to graduate with a bachelor's degree as non-minority community college transfer students. In the BPS dataset, race was coded into eight categories: "White," "Black/African American," "Hispanic/Latino," "Asian," "American Indian/Alaska Native," "Native Hawaiian/Pacific Islander," more than one race, or "other." For this study, race was recoded into four dummy variables: "Black," "Hispanic," "Asian," and "other." "White" students were the reference group.

The last demographic consideration is given to parents' level of education. Parents' educational level includes whether or not at least one parent earned a bachelor's degree. Previous research indicates that first generation college students are less likely to persist because of the lack of necessary cultural and social capital passed on by parents (Pascarella, Pierson, Wolniak, & Terenzini, 2004). Porchea et al. (2010) and Wood et al. (2012) found that community college beginners with at least one parent with a bachelor's degree were

more likely to transfer. In the BPS dataset, parents' educational level was categorized into six categories: (1) did not complete high school; (2) high school completion; (3) some college but no degree; (4) associate's degree; (5) bachelor's degree; (6) graduate or other post-bachelor degree. For this study, parents' education level was coded as one for completion of bachelor's degree and zero if otherwise.

Academic Factors

In their assessment of Bean and Metzner's (1985) model on nontraditional student attrition, Stahl and Pavel (1992) found that enrollment status, high school performance, and educational goals had a significant impact on a student's decision to persist through community college.

Research has demonstrated that academic preparation, including high school grades and standardized testing, has an influence on persistence and eventual degree attainment (Adelman, 1999). Several recent studies also support high school academic performance as a predictor of transfer or degree attainment. Arbona and Nora (2007) found that Hispanic students with high academic achievement were more likely to transfer. Wood et al. (2012) also found that prior academic performance was a determinant of transfer. Academic preparation for this study includes students' high school grades and standardized test scores. The BPS dataset lists high school grades as categorical data for students earning A, B, C, D, or F grades. This variable within the dataset is not continuous. Students who earned As and Bs in high school are coded as one and zero otherwise. Standardized test scores were kept as continuous and grand mean centered.

Another factor to consider is students' enrollment intensity. Enrollment decisions may differ for part-time students and full-time students. Mamiseishvili and Deggs (2013)

found a positive correlation with persistence and transfer decisions of low-income community college beginners. Students in their study enrolled full-time were more likely to transfer or earn an associate's degree after three years (Mamiseishvili & Deggs, 2013). Because students may vary their attendance intensity over the course of postsecondary education, this study examined students' attendance intensity during their first year in college. Students were coded one if they were enrolled full-time in their first year and zero if otherwise.

Educational goals are a student's assessment of the degree he or she expects to earn. Arbona and Nora (2007) found that high educational goals predicted degree attainment of Hispanic community college beginners. Mamiseishvili and Deggs (2013) also found that degree expectations positively contributed to transfer and associate's degree completion among low-income community college beginners. Participants indicated their degree aspirations in the base-year survey. For this study, degree aspirations are determined as the highest degree ever expected in 2004 when students first enrolled. For this study, the highest degree expected was coded one if a bachelor's degree and zero if otherwise.

Environmental Factors

The financial nexus model considers how students' perceptions and expectations about college costs' influences choice and eventual persistence in college (Paulsen & St. John, 2002). This study considered whether cost was a reason students chose to attend their first institution in 2003–2004. This dichotomous variable was coded as one if the student chose their institution because of cost and zero if not.

Cabrera et al. (2012) found that financial aid assistance positively influences degree completion of low-income students. In their study, Attewell et al. (2011) found that more

financial aid awarded positively correlates with community college beginners' graduation prospects. For this study, the total amount of grants and loans students received during the 2003–04 year was considered. These financial variables were presented as continuous variables in \$1,000 units. For analysis, these variables were centered, then divided by 1,000.

Several researchers have considered how employment during college influences persistence decisions. While full-time employment impedes persistence (Astin, 1975; Anderson, 1981), part-time work does not result in similar negative effects (Anderson, 1981; Astin & Oseguera, 2003, 2005; Oseguera, 2006). Attewell et al. (2011) found that part-time work predicted degree completion of community college beginners. However, Mamiseishvili and Deggs (2013) did not find a correlation between work and transfer or associate's degree completion among low-income community college beginners. Students reported whether they worked 35 or more hours a week (full-time) or fewer than 35 hours per week (part-time) in the BPS study. For this study, employment was recoded into two dummy variables (worked full-time and worked part-time). Students who did not work were the reference group.

In addition to working, outside family obligations may negatively impede degree completion (Arbona & Nora, 2007; Astin & Oseguera, 2005; Tinto, 1993). However, Wood et al. (2012) found that having dependents was predictive of transfer. In this study, having family responsibilities, including dependents or a spouse, was dummy coded one if students had family responsibilities and zero if otherwise.

College Experiences

Prior research has indicated the importance of interaction with faculty and peers in enrollment decisions. Barnett (2011) found that faculty interaction and validation modestly

predicted community college students' intent to remain enrolled in college. In addition, college student involvement is another factor that has been known to influence degree attainment. Several studies have shown that involvement in college is key to degree attainment (Astin, 1993; Bean, 1990, Swail, Redd, & Perna, 2003; Tinto, 1993). Wood et al. (2012) found that measures of student integration, including participation in various activities, were predictive of transfer. Because community college student interaction occurs mostly in the classroom, community college transfer students may demonstrate different patterns of student involvement, which may in turn impact their degree attainment (Barnett, 2011). The BPS: 04/09 dataset includes composite variables that consider academic/faculty integration and social/extracurricular integration. Both the academic index and the social integration index are composite variables of the overall level of academic and social integration the respondent experienced at his/her first institution. The academic integration index variable is derived from the average of responses indicating how often students participated in study groups, had social contact with faculty, met with an academic advisor, or talked with faculty about academic matters outside of class during the 2003–04 year. Respondents were asked to report the frequency of their participation in each of these activities (0 = never, 1 = sometimes; and 2 = often). Values for these items were averaged and the average was multiplied by 100. The minimum value of the academic integration index is 25 and the maximum value is 200. The social integration composite variable is derived from the average of the responses indicating how often students had attended fine arts activities, participated in intramural or varsity sports, or participated in school clubs during the 2003–04 year. Similar to the academic integration composite variable, respondents were asked to report the frequency of their participation in each of these

activities (0 = never, 1 = sometimes; and 2 = often). Again, values for these items were averaged and the average was multiplied by 100. The minimum value of the social integration index is 25 and the maximum value is 200. These index variables were grand mean centered for inclusion within the model.

In their model, Bean and Metzner (1985) also highlight the importance of academic variables while in college. Academic performance early in a student's college career has proven to be a strong predictor of degree attainment (Pascarella & Terenzini, 1991, 2005; Adelman, 2006). Wang (2009) found that community college GPA was a strong predictor of continuous enrollment and transfer. In addition, Stahl and Pavel (1992) also found a positive effect with the inclusion of cumulative GPA. In this study, early academic performance in students' college career is represented by the cumulative grade point average (GPA) during the 2003–2004 year. GPA was centered.

Several existing theoretical models as well as existing empirical studies suggest that demographic characteristics, academic factors, environmental factors, and college experiences influence low-income and community college beginners' transfer and degree attainment. This study built on earlier research and examined transfer and degree attainment outcomes over a six-year period. Prior studies have not considered how the interaction of these particular variables influences transfer and degree attainment of low-income community college beginners.

Data Analysis

This study used logistic regression to examine the demographic, academic, environmental, and college factors that predict transfer and degree attainment of low-income community college beginners. According to Adelman (1999), logistic regression is the most

appropriate form of analysis for investigating degree completion. In addition, researchers may predict discrete outcomes from a set of variables that may be continuous, discrete, dichotomous, or a mix (Tabachnick & Fidell, 2013). Lastly, logistic regression is an appropriate statistical method for the study of variables that influence dichotomous outcomes, such as transfer and degree attainment (Cabrera, 1994; Menard, 1995; Paulsen & St. John, 2002).

Data Management

Because the publicly available data files do not provide sufficient levels of variable detail, this study utilized the restricted use data files for the BPS 2004/09 study. The data files were kept in a secure office and stored in a locked cabinet when not in use. The electronic files and all generated data and analysis files were stored on a password-protected desktop computer. The files were secured with a warning regarding the sensitivity of the data, and only the researcher and licensed dissertation committee members have access to the data.

All analyses were conducted using IBM® SPSS® Statistics Premium Package version 23. Prior to analysis, I took several data management steps to ensure proper use of data. First, I created a study sample data set using only the necessary identification, methodological, and substantive variables of interest from the original BPS dataset. The data was examined to determine whether missing or skipped data occurred randomly. I then examined non-responses to determine whether they may be re-coded into substantial response categories.

The data was restricted to low-income community college beginners for whom data were available on all model variables (listwise deletion). Of the initial sample of $n = 1,010$, 450 cases were missing at least one variable of interest that could not be re-coded into

substantial response categories and were removed via listwise deletion during analysis. As a result, 550 cases were included in the final analysis ($n = 550$). Although logistic regression does not make the same assumptions of linear models based on ordinary least squares, it is necessary to review the data to verify a few assumptions. First, independence of the error terms is assumed given the design of the BPS studies. Next, the data was checked for multicollinearity. Examination of tolerance and VIF values indicated that multicollinearity assumptions were not violated. I ran the model for frequency and descriptive statistics of each of the variables. Lastly, I used sequential logistic regression to determine if the addition of variables from each category within my model improved the model. Each model used normalized weight variables based on the BPS weight variable WTB000.

Logistic Regression

Following the example of other persistence studies, this study used logistic regression (e.g., Paulsen & St. John, 2002; Lohfink & Paulsen, 2005; Mourad & Hong, 2011; Wang, 2013). Logistic regression indicates the probability of a particular outcome (e.g., to transfer or not; to attain a bachelor's degree or not) in relation to a set of variables (e.g., background variables) (Tabachnick & Fidell, 2013). Logistic regression involves a logit transformation on the probability (Allison, 2010). The odds of a student transferring or attaining a bachelor's may be expressed as:

$$Y = \frac{\pi}{1 - \pi}$$

Where π is the probability of transfer ($Y = 1$) when transferring is coded as "1" and not transferring is coded as "0." The log-odds can be any number and can thus be modeled as a

linear function of the independent variables (Allison, 2010). The logistic regression model is specified as a linear model for the natural logarithm of the odds of the outcome occurring:

$$g(x)=\log\left(\frac{\pi}{1-\pi}\right) = \alpha + \beta_1X_1+ \beta_2X_2+\dots \beta_kX_k,$$

where $g(x)$ is the logit transformation of the odds that the student transferred or earned a bachelor's degree given the set of predictors in the models. The X 's represent the independent variables, the β 's are regression coefficients, and α is a constant term. The model is estimated using a maximum likelihood procedure which finds the estimates of model parameters that maximize the probability of producing the pattern of observations found in the data (Tabachnick & Fidell, 2007).

Logistic Regression Models

Sequential logistic regression analysis was conducted on the sample consisting of low-income community college beginners with the intent to transfer and/or earn a bachelor's degree ($n = 550$) to estimate the influence of the independent variables in predicting the probability of a student transferring to a four-year college or university three years after initial enrollment or attaining a bachelor's degree six years after initial enrollment.

To answer the first research question, what are the effects of demographic characteristics, academic factors, environmental factors, and college experiences on transfer of low-income community college beginners, variables were introduced to the analysis in a block format, resulting in four models. The first model introduced the demographic variables (age, gender, race, parents' education). The second model kept the demographic variables and introduced the academic variables (high school grades, SAT/ACT scores, enrollment intensity, and highest degree expected). The third model included the demographic variables, the academic variables, and introduced the environmental variables (cost as reason for

attendance, grants, loans, employment, and family responsibilities). The full model included demographic, academic, and environmental variables and introduced the college experience variables (first year cumulative GPA, social integration, and academic integration). Each block was entered into the analysis to determine how the addition of variables contributed to the full model.

To answer the second research question, what are the effects of demographic characteristics, academic factors, environmental factors, and college experiences on degree attainment of low-income community college beginners, variables were also introduced to the analysis in a block format resulting in four models. The first model introduced the demographic variables (age, gender, race, parents' education). The second model kept the demographic variables and introduced the academic variables (high school grades, SAT/ACT scores, enrollment intensity, and highest degree expected). The third model included the demographic variables, the academic variables, and introduced the environmental variables (cost as a reason for attendance, grants, loans, employment, and family responsibilities). The full model included demographic, academic, and environmental variables and introduced the college experience variables (first year cumulative GPA, social integration, and academic integration). Each block was entered into the analysis to determine how the addition of variables contributed to the full model.

Based on the recommendations by Huang and Moon (2013), the logistic regression analyses was examined to determine the following: (1) the likelihood ratio, Wald test, and -2 log likelihood, which provide an overall evaluation of the model; and (2) the significance based on Wald χ^2 test of relevant terms.

Summary

Using data from the BPS: 04/09 survey, the present study investigated the factors that contributed to the successful transfer and bachelor's degree attainment of low-income community college beginners. Logistic regression models were applied to low-income community college beginners to predict the odds of transferring to a four-year college and the odds of attaining a bachelor's degree.

Statistical analysis included a test of goodness-of-fit, and observation of a Wald's χ^2 to test the change in probability of transfer and degree attainment attributable to a unit change in an independent variable.

CHAPTER FOUR

FINDINGS

This chapter provides results from an analysis determining the effects of demographic, academic, environmental, and collegiate experience variables on the successful transfer and degree attainment of low-income community college beginners. This chapter includes descriptive statistics of the selected sample. Logistic regression analysis was used to determine how inclusion of variables into the model predict the odds of low-income community college beginners transferring and eventually attaining a bachelor's degree. A summary of the findings is included.

Descriptive Statistics

The initial sample for this study was drawn from beginning college students who were interviewed during the 2003–04 base year of the *Beginning Postsecondary Students Longitudinal Study 04/09* (BPS: 04/09) and with whom researchers completed final interviews in 2009. The original sample in 2003 of $n = 18,640$ participants included 1,810 low-income students who initially began their postsecondary study at community colleges. Of the 1,810 low-income students who initially began their postsecondary study at community colleges, 1,010 indicated an intent to transfer to a four-year college and/or earn a bachelor's degree. Only 550 cases with all variables of interest following listwise deletion were included in the final analyses. Table 4.1 provides the summary of descriptive statistics for the total sample, the analyzed sample and the two outcome variables—transferred and attained a bachelor's degree. Among those low-income community college beginners with the initial intent of transferring, 15.7% had transferred three years after initial enrollment.

Among those low-income community college beginners with the initial intent of transferring, 15.3% had attained a bachelor's degree six years after initial enrollment.

Demographic Characteristics

Examination of the analyzed sample reveals that more women than men were represented (61.2% women versus 38.8% men). The larger representation of women was fairly consistent in the transfer group (57.6%) and the attained degree group (60.4%). The average age in 2003 of the analyzed sample was 18.59. This average age was a little higher for the total sample than for the transfer group (19.62) or for the attained group (18.74).

Less than half of the analyzed sample included White students (39.4%). Black students were 28.2% of the analyzed sample, Hispanic students were 20.2% of the analyzed sample, Asian students were 6.5% of the analyzed sample and students of other races (including American Indian/Alaskan Native, multi-racial, Native Hawaiian/Pacific Islander, and Other) were 5.7% of the analyzed sample. The proportion of Black students in the transfer group (20.9%) and the attained group (20.1%) was lower than the proportion found in the total sample (26.2%). The proportion of Hispanic students in the transfer group (17.7%) was smaller than the total sample (20%) but larger in the attained group (18.8%). While the proportion of Black and Hispanic students in the transferred and attained categories was lower than the respective sample proportion, the proportion of Asian students in the transfer group (10.1%) and the attained group (13.0%) was higher than the proportion found within the sample (6.5%).

The last demographic characteristic included in my model was parents' education. Because the analyzed sample only included cases with all variables included, cases where students did not know the level of their parents' education were excluded from the model.

Other responses for parents' educational level of the analyzed sample indicated that 7.0% of the parents had no high school diploma, 41.0% had a high school diploma or its equivalent, 17.5% had some college but no degree, 10.1% had an associate's degree, 14.3% had a bachelor's degree, and 10.1% had a graduate or post-bachelor's degree.

Academic Factors

In terms of the academic factors included in the model, 54.5% of the analyzed sample had an A/B average in high school and 45.5% had grades C or lower. When comparing the grades of the students in the total sample to those in the transfer and attained groups, a higher proportion of students in both the transfer group (70.9%) and the attained group (70.1%), had an A/B average in high school. The average SAT/ACT score of the analyzed sample was 848.45. The average SAT/ACT was higher for the transfer group (918.02) but lower for the attained group (891.65).

A majority of the students within the analyzed sample attended college on a full-time basis (72.7%) while 27.3% attended on a part-time or mixed basis. The proportion of students attending on a full-time basis was higher for both the transfer group (88.0%) and the attained group (92.2%).

When asked about the highest degree students expected to earn during the base year, 0.4% indicated a certificate, 3.8% indicated an associate's degree, 35.7% indicated a bachelor's degree, and 60.2% indicated a graduate or post-bachelor's degree. For the students who either transferred within three years or attained a bachelor's degree within six years, 98.1% responded indicating their expectation to obtain a bachelor's degree or post-bachelor's degree.

Environmental Factors

When considering the environmental factors included in my model, 73.3% of the students within the analyzed sample indicated that cost was a reason they selected their base year school, while 26.7% said that cost was not a reason they selected their base year college. Within the sample, the proportion of students who indicated that cost was a reason they selected their base-year school was higher for those students who transferred (74.1%) than among students who attained a bachelor's degree (72.7%).

The average grant amount for the analyzed sample was \$3,270.44. This average amount was higher for both the transfer group (\$2,611.27) and the attained group (\$2,689.48). The average loan amount for the total sample was \$228.17. The average loan amount was higher for the transfer group (\$254.04), and for the attained group (\$324.40).

When considering work, 28.0% of the analyzed sample did not work, while 20.6% of the analyzed sample worked full-time and 51.4% worked part-time. The proportion of students who did not work in the transfer group was 32.9%. The proportion of students working full-time (19.0%) who transferred was lower than the proportion of the total sample. The proportion of students working part-time (48.1%) who transferred was slightly higher than the proportion who worked part-time in the full sample. In the attained group, 31.2% did not work, while 19.5% worked full-time and 49.4% worked part-time.

Lastly, 9.6% of the analyzed sample indicated that they had family responsibilities, while 90.4% indicated they did not have any family responsibilities. The proportion of students with family responsibilities in the transfer category (6.3%) was smaller than the total sample proportion who had family responsibilities. The proportion of students with family responsibilities in the attained group was 8.4%.

College Experiences

For the last group of variables in the model, I considered college experiences. Both the academic integration index and the social integration index are composite variables of the overall level of academic and social integration the respondent experienced at the first institution. The academic integration index variable is derived from the average of the responses indicating how often students participated in study groups, had social contact with faculty, met with an academic advisor, or talked with faculty about academic matters outside of class during the 2003–04 year. Values for these items were averaged and the average was multiplied by 100. The minimum value of the academic integration index is 25 and the maximum value is 200. The social integration composite variable is derived from the average of the responses, indicating how often students had attended fine arts activities, participated in intramural or varsity sports or participated in school clubs during the 2003–04 year. Similar to the academic integration composite variable, respondents were asked to report the frequency of their participation in each of these activities (0 = never, 1 = sometimes; and 2 = often). Again, values for these items were averaged and the average was multiplied by 100. The minimum value of the social integration index is 25 and the maximum value is 200.

The average academic integration composite index for the analyzed sample was 70.67. The average academic integration composite index for the transfer group was 75.63 and for the attained group was 75.81. The average social integration composite index for the analyzed sample was 23.80. This average social integration composite index was 30.95 for the transfer group and 27.44 for the attained group.

Lastly, the average first-year cumulative GPA for the analyzed sample in the 2003–2004 school year was 2.73. The average first-year cumulative GPA for the transfer group in

the 2003–2004 school year was 3.15, and the average cumulative GPA for the attained group in the 2003–2004 school year was 3.13.

Table 4.1 Descriptive Characteristics of Low-income Community College Beginners

Variables	Total Sample <i>N=1,010</i>	Analyzed Sample <i>N = 550</i>	Transferred <i>N=160</i>	Attained Degree <i>N=150</i>
	M (SD)	M (SD)	M (SD)	M (SD)
Age in 2003	20.27 (4.92)	18.59 (1.02)	19.62 (6.34)	18.74 (1.56)
Social Integration	21.53 (36.26)	23.80 (36.89)	29.44(43.87)	28.72 (38.24)
Academic Integration	63.45 (43.17)	70.67 (42.73)	74.69 (44.78)	70.52 (38.66)
Financial				
Grants	2041.67 (2371.03)	3270.44 (2696.71)	2611.27 (2878.87)	2689.48 (2818.89)
Loans	228.17 (873.89)	373.87 (1235.87)	254.04 (825.95)	324.40 (1340.87)
SAT/ACT	844.02 (174.44)	848.45 (175.37)	918.02 (177.96)	891.65 (180.37)
College GPA	272.20 (87.82)	273.30 (84.75)	315.26 (59.55)	313.22 (62.61)

Table 4.1 Continued

Variables	Total Sample <i>N=1,010</i>	Analyzed Sample <i>N=550</i>	Transferred <i>N=160</i>	Attained Degree <i>N=150</i>
	%	%	%	%
Gender				
Male	39.8	38.8	42.4	39.6
Female	60.2	61.2	57.6	60.4
Race				
Black	26.2	28.2	20.9	20.1
Hispanic	20.0	20.2	17.7	18.8
Asian	6.5	6.5	10.1	13.0
White	40.5	39.4	41.1	40.3
Other	6.8	5.7	10.2	7.8
Parents' Education				
Do not know	2.88	n/a	n/a	n/a
No High School Diploma	9.5	7.0	3.2	9.1
High School	35.6	41.0	34.8	37.0
Some College, No Degree	20.4	17.5	17.8	16.8
Associate's Degree	8.6	10.1	11.4	9.7
Bachelor's Degree	14.2	14.3	16.5	15.6
Graduate/Post-bachelor's Degree	8.8	10.1	13.9	11.0

Table 4.1 Continued

Variables	Total Sample <i>N=1,010</i>	Analyzed Sample <i>N=550</i>	Transferred <i>N=160</i>	Attained Degree <i>N=150</i>
	%	%	%	%
High School Grades				
A/B Grades	60.0	54.5	70.9	70.1
Less than A/B grades	18.1	45.5	14.6	11.7
Enrollment Intensity				
Enrolled Full-time	76.5	72.7	88.0	92.2
Enrolled Part-time/Mixed	20.0	27.3	8.2	4.5
Highest Degree Expected				
Certificate	0.2	0.4	n/a	n/a
Associate's Degree	4.3	3.8	3.2	1.9
Bachelor's Degree	37.6	35.7	31.6	22.1
Graduate/Post-bachelor's	58.0	60.2	65.2	76.0
Cost Reason to Attend				
Yes	71.2	73.3	74.1	72.7
No	28.8	26.7	25.9	27.3
Employment				
No Job	30.4	28.0	32.9	31.2
Work—Full-time	21.9	20.6	19.0	19.5
Work—Part-time	47.7	51.4	48.1	49.4

Table 4.1 Continued

Variables	Total Sample <i>N=1,010</i>	Analyzed Sample <i>N=550</i>	Transferred <i>N=160</i>	Attained Degree <i>N=150</i>
	%	%	%	%
Family Responsibilities				
Yes	15.3	9.6	6.3	8.4
No	84.7	90.4	93.7	91.6

Logistic Regression Analysis

Using a set of theoretically grounded predictor variables, I estimated eight logistic regression models to predict whether low-income community college beginners transferred to a four-year institution three years after the start of college and whether low-income community college beginners attained a bachelor's degree six years after the start of college. It should be noted that each logistic regression analysis was conducted on the complete sample of low-income community college beginners who indicated they expected to transfer to a four-year college and/or earn a bachelor's degree ($n = 1010$). However, of the initial sample of $n = 1,010$, 450 cases were missing at least one variable of interest and were removed via listwise deletion during analysis. Only 550 cases were included in the final analyses.

Research Question One

The first research question asked the following: What are the effects of demographic characteristics, academic factors, environmental factors, and college experiences on transfer of low-income community college beginners? A sequential logistic regression analysis was performed using IBM® SPSS® to assess the odds of transfer among low-income community college beginners three years after initial enrollment. Variables were introduced to the analysis in blocks, resulting in four models. The demographic predictors were age, gender, race, and parents' education (completion of a bachelor's degree). The academic predictors included high school grades (A/B student, less than A/B student), standardized test scores (SAT/ACT), enrollment intensity (full-time enrollment), and highest degree expected (certificate, associate's degree, bachelor's degree, post-bachelor's degree). The environmental predictors included cost as a reason for base-year institution selection, loan

amount received, grant amount received, employment (full-time work, part-time work, or no work), and family responsibilities (married and/or with dependents). Lastly, the college predictors included the first year cumulative GPA of the 2003–2004 school year, academic integration during the 2003–2004 school year (a composite index measuring interaction with faculty, advisors, or peers outside of class), and social integration during the 2003–2004 school year (a composite index measuring participation in social activities outside of class). The first model introduced the demographic variables. The second model kept the demographic variables and introduced the academic variables. The third model included the demographic variables, the academic variables, and introduced the environmental variables. The full model included demographic, academic, and environmental variables and introduced the college experience variables. Each block was entered into the analysis to determine how the addition of variables contributed to the full model.

In logistic regression, significance of the model can be assessed comparing the Log Likelihood function (-2 Log Likelihood or -2 LL) among the models (Huang & Moon, 2013). If the independent variables have a relationship with the dependent variable, the ability to predict the dependent variable accurately will improve, and the log likelihood measure will decrease (Huang & Moon, 2013). As part of the analysis, a null model was produced with only the intercept and no predictors to determine transfer. The log likelihood value for the null transfer model was 583.989. The log likelihood for the full transfer model was 506.213. The decrease in log likelihood values gives indication that the addition of variables into the model improved the odds of transfer (Huang & Moon, 2013). The Likelihood Ratio Chi-Square for the final transfer model equaled 100.928 with 20 degrees of freedom and was statistically significant at $p < .001$. This significant chi-square value indicated that there was a

significant relationship between the dependent variable and the predictor variables in the model.

After reviewing the overall fit of the model, I reviewed the parameter estimates for the predictor variables to identify the contribution of each predictor on the overall outcome (transfer). Table 4.2 summarizes the results from this analysis. The table includes the regression coefficients, standard errors, Wald χ^2 statistics, and odds ratio for the predictors used in the models to predict transfer three years after initial enrollment. The regression coefficients represent how much difference a unit change in the predictor makes in the probability of the outcome or the natural logs of the odds ratios (Tabachnick & Fidell, 2013). The Wald χ^2 statistic is used to assess the significance of coefficients (Tabachnick & Fidell, 2013). The Wald χ^2 statistic is the ratio of the square of the regression coefficient to the square of the standard error of the coefficient and is distributed as a chi-square distribution (Tabachnick & Fidell, 2013). A significant Wald χ^2 statistic indicates that the predictor is making a significant contribution to the likelihood of the outcome (Field, 2005). According to Field (2005), if the Wald χ^2 value is greater than one, then it indicates that as the predictor increases, the odds of the outcome occurring also increase. However, a value less than one indicates that as the predictor increases, the odds of the outcome occurring decrease (Field, 2005). The odds ratio is the change in odds in one of the categories of outcome when the value of a predictor variable increase by one unit (Tabachnick & Fidell, 2013). Odds ratios greater than one reflect the increase in odds of an outcome of one (the “response” category) with a one-unit increase in the predictor, and odds ratios less than one reflect the decrease in odds of that outcome with a one-unit change (Tabachnick & Fidell, 2013).

Table 4.2 provides the regression coefficients, standard errors, Wald χ^2 statistics, and odds ratios for each of the predictors used in the models to predict transfer three years after initial enrollment. Given the smaller number of cases included in the model, significance was set at $p < .05$. In the first model, being male ($\chi^2 = 4.497, p < .05$), being Hispanic ($\chi^2 = 4.833, p < .05$), and parents' education level ($\chi^2 = 3.867$) had significance in the odds of transferring after three years. The odds of transfer for male students were .623 times those for female students; in other words, the odds of male students transferring after three years was 37% lower than the odds for female students. The odds of transfer for Hispanic students were .934 times the odds of transferring as a White student, or 6.6% lower than the odds for White students. And lastly, the odds of transfer for students' whose parents have at least a bachelor's degree were 1.597 times the odds of first-generation college students.

In model two, being male ($\chi^2 = 7.074, p < .05$), the SAT/ACT ($\chi^2 = 25.306, p < .05$), and enrollment intensity ($\chi^2 = 5.31, p < .05$) significantly contributed to the odds of transfer. The odds of transfer for male students were .535 times the odds of transferring for female students, or 46.5% lower for men than women. The odds of transfer increased by a factor of 1.144 for every unit increase on the SAT or ACT. And the odds of transfer for full-time students were 1.793 times the odds for part-time students, or 79% higher for full-time students than part-time students.

When environmental factors were added in model three, being male ($\chi^2 = 5.885, p < .05$), SAT/ACT ($\chi^2 = 12.372, p < .05$), enrollment intensity ($\chi^2 = 6.091, p < .05$), loans ($\chi^2 = 17.842, p < .05$), and family responsibilities ($\chi^2 = 7.989, p < .05$) significantly contributed to the odds of transfer after three years. The odds of male students transferring were .553 times the odds of transferring for female students, or 44.7% lower for men than women. The odds

of transferring increased by a factor of 1.477 for every one unit increase on the SAT or ACT. The odds of transferring for full-time students were 1.971 times the odds for part-time students. The odds of transferring after three years increased by a factor of 19.167 for every unit increase in loans. Lastly, the odds of transferring decreased by a factor of .212 for students who were married/and or had dependents.

In the full model that included all predictor variables, SAT/ACT ($\chi^2 = 10.465, p < .05$), enrollment intensity ($\chi^2 = 5.878, p < .05$), loans ($\chi^2 = 13.048, p < .05$), family responsibilities ($\chi^2 = 8.701, p < .05$), and first-year cumulative college GPA ($\chi^2 = 14.967, p < .05$) significantly contributed to the odds of transfer after three years. The odds of transfer increased by a factor of 1.437 for every one unit increase in SAT or ACT. The odds of transfer for full-time students were 1.998 times the odds of students who attended part-time. The odds of transferring after three years increased by a factor of 13.911 for every unit increase in loans, thus demonstrating the influence of loans on transfer. The odds of transferring decreased by a factor of .192 for students who were married/and or had dependents. Lastly, the odds ratio of 1.007 showed little change in the odds of transferring on the basis of a one-unit change in GPA. Thus, there is a distinction with increased GPAs, but the distinction is not very strong.

Research Question Two

To answer the second research question (what are the effects of demographic characteristics, academic factors, environmental factors, and college experiences on degree attainment of low-income community college beginners?), a sequential logistic regression

Table 4.2 Logistic Regression Model Coefficients, Standard Errors, Wald Statistics and Odds Ratios for Transfer

Variable	Model 1				Model 2				Model 3				Model 4			
	B	S.E.	Wald	O.R.	B	S.E.	Wald	O.R.	B	S.E.	Wald	O.R.	B	S.E.	Wald	O.R.
Age	.000	.000	3.722	1.000	.000	.000	3.018	1.000	.000	.000	1.944	1.000	.000	.000	1.695	1.00
Gender	-.473**	.223	4.497	.623	-.626**	.235	7.074	.535	-.593**	.244	5.885	.553	-.428	.250	2.927	.652
Black	-.506	.264	3.660	1.012	-.070	.286	.060	.932	.182	.315	.333	.834	-.044	.323	.019	.957
Hispanic	-.633**	.288	4.833	.934	-.554	.299	3.431	.574	-.444	.315	1.994	.641	-.489	.319	2.343	.613
Asian	-.629	.532	1.393	1.515	-.663	.554	1.435	.515	-.600	.564	1.132	.549	-.653	.596	1.285	.521
Other	.087	.428	.041	1.091	.193	.450	.183	1.212	.209	.483	2.187	1.232	.324	.484	.449	1.383
Parents' Education	.468**	.238	3.867	1.597	.421	.249	2.863	1.523	.412	.267	2.371	1.509	.316	.272	1.345	1.371
High School Grades					.052	.228	.052	1.053	.093	.238	8.154	1.098	-.026	.247	.011	.974
SAT/ACT					.135**	.027	25.306	1.144	.390**	.111	12.372	1.477	.362**	.112	10.465	1.437
Enrollment Intensity					.584**	.253	5.31	1.793	.679**	.275	6.091	1.971	.692**	.286	5.878	1.998
Highest Deg. Expected					.724	.503	2.074	2.064	.601	.529	1.291	1.824	.587	.547	1.151	1.798
Cost as Reason									.2.86	.296	.932	1.330	.393	.302	1.697	1.482
Loans									2.953**	.699	17.842	19.167	2.633**	.729	13.048	13.91
Grants									.199	.120	2.704	1.219	.188	.125	2.267	1.207
Worked—Part-time									-.167	.269	.386	.846	-.058	.276	.044	.944
Worked—Full-time									-.461	.349	1.743	.630	-.471	.357	1.734	.625
Family Responsibilities									-1.551**	.549	7.989	.212	-1.650**	.559	8.701	.192
Cumulative GPA													.007**	.002	14.967	1.007
Academic Integration													-.003	.003	1.210	.997
Social Integration													.005	.003	2.113	1.004

** p <.05

analysis was performed to assess the odds of bachelor's degree attainment of low-income community college beginners six years after initial enrollment in college. The predictors were entered into the analysis in blocks, resulting in four models. Similar to the models used to predict the odds of transfer, the first model to assess degree attainment introduced the demographic variables. The second model kept the demographic variables and introduced the academic variables. The third model included the demographic variables and academic variables, and introduced the environmental variables. The full model to assess degree attainment included demographic, academic, and environmental variables and introduced the college experience variables. Each block was entered into the analysis to determine how the addition of variables contributed to the full model.

There was a good model fit for the model using only the constant. The log likelihood value for the null degree attainment model with only the constant was 606.399. The final log likelihood with all the predictor variables decreased to 524.090, which indicated that the ability to predict the odds of degree attainment had improved. The Likelihood Ratio Chi-Square for the final degree attainment model equaled 98.267 with 20 degrees of freedom and was statistically significant at $p < .001$. This significant chi-square value indicated that there was a significant relationship between the dependent variable and the predictor variables in the model.

Table 4.3 provides the regression coefficients, standard errors, Wald χ^2 statistics, and odds ratios for each of the predictors used in the models to predict the odds of degree attainment six years after initial enrollment. In model one, being Black ($\chi^2 = 5.558, p < .05$) and being Hispanic ($\chi^2 = 5.965, p < .05$) significantly contributed to the odds of degree attainment six years after initial enrollment. The odds of degree attainment for Black students

were .531 times the odds of degree attainment for White students. In other words, the odds of attaining a degree for Black students were 46.9% lower than for White students. The odds of degree attainment for Hispanic students were .505 times the odds of degree attainment for White students, or 49.5% lower than the odds of attaining a degree for White students.

In model two, being Hispanic ($\chi^2 = 5.926, p < .05$), the SAT/ACT ($\chi^2 = 11.944, p < .05$) and enrollment intensity ($\chi^2 = 12.630, p < .05$) significantly contributed to the odds of degree attainment. The odds of degree attainment for Hispanic students were .496 times the odds of degree attainment of White students, or 50.4% lower for Hispanic students. With every unit increase on the SAT or ACT, the odds of degree attainment increased by a factor of 1.093. Lastly, the odds of degree attainment for students who attended college full-time were 7.636 times the odds of attending part-time.

When environmental variables were added in model three, being Black ($\chi^2 = 4.999, p < .05$), being Hispanic ($\chi^2 = 5.374, p < .05$), SAT/ACT ($\chi^2 = 16.795, p < .05$), enrollment intensity ($\chi^2 = 15.367, p < .05$), loans ($\chi^2 = 7.188, p < .05$), and family responsibilities ($\chi^2 = 5.468, p < .05$) significantly predicted the odds of degree attainment after six years. The odds of degree attainment for Black students were .494 times the odds of degree attainment for White students, or 50.6% lower for Black students. The odds of degree attainment for Hispanic students were .499 times the odds of degree attainment of White students or 50.1% lower for Hispanic students. With every unit increase on the SAT or ACT, the odds of degree attainment increased by a factor of 1.587. The odds of degree attainment for students who attended college full-time were 2.975 times the odds of attending part-time. For every unit increase in loans, the odds of degree attainment increased by a factor of 5.815. Lastly, the

odds of degree attainment decreased by a factor of .335 for students who were married/and or had dependents.

In the full model that included all predictor variables, being Hispanic ($\chi^2 = 5.670, p < .05$), SAT/ACT ($\chi^2 = 13.633, p < .05$), enrollment intensity ($\chi^2 = 13.891, p < .05$), loans ($\chi^2 = 3.481, p < .05$), family responsibilities ($\chi^2 = 5.541, p < .05$), and first year cumulative college GPA ($\chi^2 = 28.603, p < .05$) significantly predicted the odds of degree attainment after six years. The odds of degree attainment for Hispanic students were .481 times the odds of degree attainment of White students, or 51.9% lower for Hispanic students. With every unit increase on the SAT or ACT, the odds of degree attainment increased by a factor of 1.528. The odds of degree attainment for students who attended college full-time were 2.939 times the odds of attending part-time. For every unit increase in loans, the odds of degree attainment increased by a factor of 3.726. The odds of degree attainment decreased by a factor of .321 for students who were married/and or had dependents. And lastly, for every unit increase in first year cumulative GPA, the odds of attaining a bachelor's degree increased by a factor of 1.010. However, this odds ratio showed little change in the odds of degree attainment on the basis of a unit increase in GPA.

Table 4.3 Logistic Regression Model Coefficients, Standard Errors, Wald Statistics and Odds Ratios for Degree Attainment

Variable	Model 1				Model 2				Model 3				Model 4			
	B	S.E.	Wald	O.R.	B	S.E.	Wald	O.R.	B	S.E.	Wald	O.R.	B	S.E.	Wald	O.R.
Age	.000	.000	2.528	1.000	.000	.000	.641	1.000	.000	.000	.578	1.000	.000	.000	.698	1.00
Gender	.023	.209	.012	1.024	-.029	.217	.017	.972	.004	.224	.000	1.004	.222	.236	.886	1.249
Black	-.632**	.268	5.558	.531	-.444	.285	2.417	.642	-.705**	.315	4.999	.494	-.509	.327	2.425	.601
Hispanic	-.684**	.280	5.965	.505	-.702**	.288	5.926	.496	-.695**	.300	5.374	.499	-.732**	.307	5.670	.481
Asian	.312	.413	.571	1.366	.271	.424	.408	1.311	.353	.435	.658	1.423	.339	.456	.551	1.403
Other	-.096	.436	.048	.909	-.066	.450	.022	.936	-.205	.483	.179	.815	-.025	.500	.002	.975
Parents' Education	.119	.242	.243	1.127	.108	.249	.187	1.114	.018	.266	.003	1.015	-.104	.274	.143	.901
High School GPA					-.270	.218	1.538	.763	-.227	.225	1.016	.797	-.481	.240	4.012	.618
SAT/ACT					.089**	.026	11.944	1.093	.462**	.113	16.795	1.587	.424**	.115	13.633	1.528
Enrollment Intensity					.902**	.254	12.630	2.464	1.090**	.278	15.367	2.975	1.078**	.289	13.891	2.939
Highest Deg. Expected					-.044	.431	.010	.957	-.307	.450	.466	.735	-.379	.471	.648	.685
Cost as Reason									-.058	.268	.047	.944	.095	.278	.117	1.100
Loans									1.760**	.657	7.188	5.815	1.315**	.705	3.481	3.726
Grants									.048	.103	.212	1.049	.009	.106	.008	1.009
Worked—Part-time									.205	.272	.570	1.228	.337	.285	1.406	1.401
Worked—Full-time									.135	.337	.160	1.144	.175	.348	.251	1.191
Family Responsibilities									-1.094**	.468	5.468	.335	-1.136**	.483	5.541	.321
Cumulative GPA													.010**	.002	28.603	1.010
Academic Integration													.001	.003	.063	.99
Social Integration													.004	.003	1.583	1.004

**p<.05

Summary

This chapter presented descriptive statistics and logistic regression findings. Descriptive statistics for each of the predictor variables to describe the total sample of low-income community college beginners, beginners who transferred, and beginners who attained a degree were presented. As has been previously shown in the literature, a majority of the low-income community college beginners with the intent to transfer in this study were women (60.2%), non-White (59.5%), and first-generation college students (74.1%). Findings differed from what has been presented in the literature in that a majority of the low-income community college beginners with the intent to transfer in this study were traditionally aged (average age of 20.27) and attended college full-time (76.5%).

Sequential logistic regression was used to answer two research questions: “What are the effects of demographic characteristics, academic factors, environmental factors, and college experiences on transfer of low-income community college beginners?” and “What are the effects of demographic characteristics, academic factors, environmental factors, and college experiences on degree attainment of low-income community college beginners?” Regression coefficients, standard errors, Wald χ^2 statistics, and odds ratios were presented for each of the predictors included in both research questions. Higher scores on the SAT/ACT, full-time college attendance, loans, and first year cumulative college GPA positively and significantly predicted the odds of transfer after three years, while family responsibilities significantly reduced the odds of transfer three years after initial enrollment in the full model. Higher scores on the SAT/ACT, attending college full-time, loans, and first-year cumulative GPA positively and significantly predicted the odds of degree attainment six years after

initial enrollment in the full model, while identifying as Hispanic and family responsibilities significantly reduced the odds of degree attainment six years after initial enrollment.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The primary purpose of this research was to determine the factors that contribute to transfer and bachelor's degree attainment of low-income community college beginners. This chapter includes conclusions based on the results, implications for research and theory, and implications for policy and practice. Research limitations and final thoughts are also included. This study sought to identify factors that influence the successful transfer and degree attainment of low-income community college beginners. To understand the factors that contributed to the transfer and degree attainment of low-income community college beginners, I posed two research questions. The first question focused on the effects of demographic characteristics, academic factors, environmental factors, and college experiences on transfer of low-income community college beginners. The second question focused on the effects of demographic characteristics, academic factors, environmental factors, and college experiences on degree attainment of low-income community college beginners.

The results of this study showed that by three years after initial enrollment, only 15.6% of the low-income community college beginners who indicated an intent to attain a bachelor's degree had successfully transferred to a four-year institution. In addition, only 15.2% of the low-income community college beginners who indicated an intent to attain a bachelor's degree had successfully done so six years after initial enrollment. These findings affirm previous studies that have indicated that low-income community college beginners are less likely to transfer and attain a bachelor's degree from a four-year institution (Ishitani, 2008; Leigh & Gill, 2003; Long & Kurlaender, 2009; Sandy, Gonzalez, & Hilmer, 2006;

Townsend & Wilson, 2006). In addition to being low-income, a majority of the students in this study were first-generation college or underrepresented ethnic minorities—backgrounds also associated with decreased likelihood of transfer and degree attainment (Goldrick-Rab, 2010). Despite these barriers, results from this study showed the factors that do contribute to the successful transfer and degree attainment of low-income community college beginners.

Transfer and Degree Attainment of Low-Income Community College Beginners

The results of the data analysis point to several conclusions related to the two research questions. First, among low-income community college beginners who transferred within three years after initial enrollment, strong scores on the SAT/ACT, full-time attendance, loan support, and first-year cumulative college GPA positively and significantly predicted the odds of transfer in the full model. Having family responsibilities significantly reduced the odds of transfer in the full model. Among low-income community college beginners who attained a degree within six years after initial enrollment, similar factors emerge as significantly predicting the odds of degree attainment. Higher scores on the SAT/ACT, attending college full-time, loan support, and first-year cumulative college GPA positively and significantly predicted the odds of degree attainment six years after initial enrollment in the full model. Also similar to transfer, family responsibilities significantly reduced the odds of degree attainment. In contrast to the findings on transfer, students who identified as Hispanic had decreased odds of degree attainment compared to students who identified as White.

It is not surprising that students who had higher scores on the SAT/ACT had increased odds of successfully transferring to and graduating from a four-year institution. This supports prior research that has shown that academic preparation that leads to successful

scores on standardized tests such as the SAT or ACT predicts the odds of transfer (Arbona & Nora, 2007; Wood et al., 2012) and degree completion within six years (Pike, Hansen, & Childress, 2014; Porchea et al., 2010). Stronger scores are indicative of better academic preparation for college-level work. Stronger scores may also indicate that students have fewer remedial courses to complete. Previous research has indicated that remediation does not improve students' chances for college-level success (Martorell & McFarlin, 2011; Scott-Clayton & Rodriguez, 2012). Higher scores on the SAT or ACT can directly impact first year achievement and indirectly impact persistence decisions (Porchea et al., 2010).

Consistent with other studies that have found that enrollment intensity significantly predicts the odds of transfer (Mamiseishvili & Deggs, 2013; Wang, 2009) and degree attainment (Porchea et al., 2010), this study also found that attending college full-time increased the odds of transfer and degree attainment. Attending college full-time may demonstrate a stronger commitment to students' individual educational goals, and students who attend college full-time may have fewer distractions that limit participation academically or socially. Full-time attendance may also be indicative of a greater sense of community or belonging at the institution (Wang, 2009). The connection to the institution may encourage persistence through transfer and degree attainment. Conversely, attending college part-time extends the time needed to complete requirements for transfer or degrees (Crosta, 2014). The extended time may cause students to become discouraged and drop out without transfer or degree attainment.

Loan assistance is another factor that positively and significantly predicted the odds of transfer and degree attainment in this study. While previous studies have shown that the assistance of financial aid has positively influenced degree completion of low-income

students (Cabrera et al., 2012) and positively correlates with community college beginners' graduation prospects (Attewell et al., 2011), studies that have specifically considered loans on community college student outcomes have been mixed. Dowd and Coury (2006) found that loans had a negative effect on persistence. Mendoza, Mendez, and Malcolm (2009) found that federal loans in conjunction with other grants positively influenced persistence for community college beginners in Oklahoma. Based on the financial nexus model, perceptions students hold about affordability have an influence on ensuing persistence decisions (St. John et al., 1996). Availability of loans to pay for education may cause low-income students to perceive that college is affordable, thereby improving the likelihood they will remain enrolled in college through transfer and degree attainment. It is also possible that students who receive loans understand that having a credential will mean better occupational outcomes post degree attainment. The notion of paying back the loans may motivate students to remain enrolled in college to earn a credential. From another perspective, loan assistance could point to students needing additional time to complete requirements for transfer or degree attainment. It is possible that any money saved or federal grant assistance received may have been exhausted thereby causing a need for additional money to pay for the degree. In either case, findings from this study have positively contributed to existing literature on loan assistance.

Lastly, first year cumulative GPA also positively and significantly predicted the odds of transfer and degree attainment. This finding is consistent with other studies that have indicated that academic performance early in a student's college career has proven to be a strong predictor of transfer (Mamiseishvili & Deggs, 2013; Wang, 2009). While this finding was significant, the odds ratio for this particular finding was not as strong as the odds ratio

for the previous findings. However, since transfer is a necessary step in the process of obtaining a bachelor's degree, strong grades early in the college career can predict persistence and degree completion (Pascarella & Terenzini, 2005). Early academic achievements may encourage continuation of requirements for transfer and degree attainment.

In this study, family responsibilities reduced the odds of transfer and degree attainment. In Bean and Metzner's (1985) model, family support, or lack thereof, was shown to have an influence on persistence decisions. In their model, family support could compensate for a weak academic record, causing students to persist (Bean & Metzner, 1985). However, lack of family support (e.g., no assistance with childcare), even with a strong academic record, caused students to drop out. Later studies have also demonstrated that having family responsibilities could influence persistence decisions (Arbona & Nora, 2007; Stahl & Pavel, 1992). In the case of this study, it is possible that family responsibilities distracted from progress towards degree completion, as in Bean and Metzner's model. Students may have been compelled to place greater emphasis on giving support to their family and lost focus on their education.

In contrast to the findings on transfer, students who identified as Hispanic had reduced odds of degree attainment compared to students who identified as White. This confirms the findings of Arbona and Nora (2007) who found that Hispanic students were less likely to attain a bachelor's degree if their first institution was a community college. Arbona and Nora (2007) considered the within-group differences amongst Hispanic students relative to persistence to bachelor's degree attainment. An explanation for the differences in degree attainment between Hispanic students and other racial groups was not provided in the Arbona

and Nora study, nor in other studies that consider the transfer and degree attainment of Hispanic students (Bailey & Dynarski, 2011; Crisp & Nora, 2010; Kena, et al., 2014). It is possible that Hispanic students lack the social and cultural capital needed to persist towards degree completion (Gonzalez, 2012). Hispanic students may have access to social capital from high school teachers and counselors who provided information needed to enroll in a community college. However, Hispanic students may lose this support once in college, thereby lacking the knowledge needed to earn a bachelor's degree. Another potential cause for reduced odds of degree attainment for Hispanic students may be tied to loan assistance. A McKinney and Burrige (2013) study that considered the effects of loans on community college persistence demonstrated that while Hispanic students comprised 16.6% of their studied sample, only 5.7% had taken out a federal loan during their first year of enrollment. This supports a previous claim that many Hispanic students choose to begin their postsecondary careers at a community college as a way to avoid additional student loan debt (Cunningham & Santiago, 2008). Not accepting loan assistance may be limiting Hispanic students' opportunities for a bachelor's degree.

Surprisingly, none of the other demographic variables significantly predicted the odds of transfer nor degree attainment three years after initial enrollment. This deviates from the results of earlier studies which found that age, gender, and parents' education influenced transfer of community college beginners (An, 2012; Mamiseishvili & Deggs, 2013; Porchea et al., 2010; Wood et al., 2012). Given all of the students in this study are low-income, it may be that income is a larger factor affecting successful transfer than age, gender, or parents' education. It is also possible that other demographic variables did not significantly predict the odds of transfer nor degree attainment because the analyzed sample was comprised of

students with an average age of 18.59 and of whom 72.7% attended college full-time. Prior studies have shown that traditionally-aged community college beginners (Wood et al., 2012) and full-time community college students (Crosta, 2014) are more likely to transfer and/or attain a bachelor's degree. Lastly, because this study focused on students who indicated an intent to transfer, the studied sample was not fully reflective of the students who attend community colleges for various reasons such as job advancement, trades, or other purposes.

Implications for Research and Theory

The present study reinforces the need to conduct additional research on the transfer and bachelor's degree attainment of low-income community college beginners. As more low-income students are encouraged to enter postsecondary opportunities and as more emphasis is placed on students completing a credential or degree of some kind, additional research is needed to understand why some low-income community college beginners are successful in transferring and earning a bachelor's degree and why so many others are not successful.

Early in his administration, President Obama set a goal that by 2020, America would once again lead the world in the proportion of college graduates (Phillips & Horowitz, 2013). Following the lead of the federal government, several organizations, including the American Association of Community Colleges, joined forces in a call to action to improve college completion rates (AACC, 2012). The College Completion Challenge (also known as the Completion Agenda) commits to increasing the number of community college students completing a degree by 50% by the year 2020 while maintaining access to higher education, improving academic quality and erasing attainment gaps associated with income, race, and gender (AACC, 2012). Proponents of the Completion Agenda see this as an opportunity for strategic changes to institutional policies and practices that will encourage completion

especially amongst low-income students (AACC, 2012). Critics of the Completion Agenda argue that the numerical targets of degree completion are noble, but unrealistic. In particular low-income students and underrepresented minority students face substantial hurdles on the path toward degree attainment and these same hurdles would still be present even with the adoption of Completion Agenda strategies (Harbour & Smith, 2016; Zumeta, Breneman, Callan, & Finney, 2012). While the data from the present study was collected prior to when the Completion Agenda took shape, results from the present study may provide context to improving college completion rates within the United States.

From previous research, we understand that there are many barriers on the path towards transfer and degree attainment (Dougherty & Reid, 2007; Goldrick-Rab, 2010; Hagedorn, 2010; Mullin, 2011), but there has been little research that explains what may aid in successful transfer and degree attainment of low-income community college beginners. As the Completion Agenda has begun to take shape, community colleges have adopted new strategies such as encouraging 15 credit hour semesters, directing students to guided academic pathways, and holistic advising to help students transfer and earn a bachelor's degree (Allen, Smith, & Muehleck, 2013; Bailey, Jagers & Jenkins, 2015; Klempin, 2014). Continued research on within-group differences of low-income community college beginners who attend community colleges that employ Completion Agenda strategies may help to decrease the achievement gap of this population compared to middle- and high-income community college beginners.

Both the significance of standardized test scores and first year cumulative college GPA within this study point to the need for future research on other academic factors that influence transfer and degree attainment of low-income community college beginners. Future

research should consider how course selection and major selection influence transfer and degree attainment of low-income community college beginners. In particular, consideration should be given to a new approach used by community colleges to guide students toward specific academic pathways. The guided pathway approach presents courses in the context of highly structured, program maps that align with students' goals for careers and further education (Bailey, Jagers, & Jenkins, 2015; Jenkins & Cho, 2013). The guided pathways approach takes the guesswork out of course selection and allows colleges to provide predictable schedules so students may complete their programs more efficiently (Bailey, Jagers, & Jenkins, 2015; Jenkins & Cho, 2013). Helping students develop an academic plan early in their college career will aid students in transferring and completing a degree on-time (Bailey, Jagers, & Jenkins, 2015; Jenkins & Cho, 2013). Preliminary successes with guided pathway programs include improved rates of retention to the second year and associate degree attainment, at large community colleges such as Queensborough Community College in New York and Valencia Community College in Orlando, Florida (Jenkins & Cho, 2013). However, because many guided pathway programs at community colleges have been implemented in a small number of community colleges within the last five years, additional research on the effectiveness of guided pathway programs is warranted (Jenkins & Cho, 2013). Research on guided pathways as a factor in predicting transfer and degree attainment may help community colleges achieve better outcomes for students who enroll from low-income backgrounds.

Because this study contributed to the mixed understanding of the influence of loans on transfer and degree attainment, future research should consider how loans influence transfer and degree attainment of low-income community college beginners. In 2015,

President Obama laid out a proposal for free tuition at community colleges. In President Obama's proposal, the federal government would pay three-quarters of the average cost of community college tuition, or about \$3,800 for two years, and states that choose to participate would cover the remaining cost of tuition (Stinson, 2015). To be eligible for America's College Promise, students would have to attend community college at least half time, maintain a 2.5 GPA and remain on a course toward completing their academic program (Stinson, 2015). Community colleges would have to offer programs that allow students to transfer credits to a bachelor's degree program (Stinson, 2015). Given current conversations surrounding free tuition at the community college level, understanding how loans influence transfer and degree attainment of low-income students is important. While similar programs to the one proposed by President Obama have already been implemented on the local and state level, there is concern for how such proposals influence degree attainment of low-income students (Kelly, 2016). Future research should consider the effectiveness of free tuition on low-income community college beginners. In particular, consideration should be given to whether free tuition programs predict better or worse odds for transfer and degree attainment than the receipt of loans Does free tuition encourage students to complete the community college work within two years? Does this success extend to the four-year level? Are students able to complete the four-year degree two years after transferring and enrolling into a four-year college?

Perhaps because this study focused only on low-income students, loans were demonstrated to positively increase the odds of transfer and degree attainment. Previous studies have only considered how loan assistance influences transfer or degree attainment of community college beginners in the aggregate (Dowd & Coury, 2006; Mendoza et al., 2009).

Future research should consider how loan assistance influences the transfer and degree attainment of low-income community colleges beginners in a similar disaggregated manner to this study. Moreover, future research should consider differences in loan amounts. In particular, consideration should be given to whether there is a specific dollar amount by which the benefits of transfer and degree attainment level off or decrease. As well, future research should consider if there is a specific accrued loan amount that will cause students to drop out. Because federal financial aid policies require students to attend college full-time to participate in federal financial programs, additional research on the different loan types (federally subsidized loans versus commercial loans) and loan amounts full-time students receive versus loans received by part-time students may provide further context regarding how loans influence transfer and degree attainment of low-income community college beginners. This additional research on loan assistance could help determine if accepting loans is a motivating factor or deterrent in persistence decisions.

An additional area for research includes understanding what causes differences in degree attainment between Hispanic students and White students. Within this study, students who identified as Hispanic demonstrated decreased odds of degree attainment when compared to White students. Hispanic students are the fastest growing population to enter higher education; however, Hispanic students' completion rates remain the lowest among all ethnic groups (Pew Hispanic Center, 2010; Samuel & Scott, 2014; Tovar, 2015). As mentioned previously, it is possible that Hispanic students lack the social and cultural capital needed to persist to degree attainment at the community college level (Arbona & Nora, 2007). While several studies have begun to consider Hispanic community college students generally (Crisp, 2010, 2013; Deil-Amen, 2011; Price & Tovar, 2014; Wood, 2012), few

studies have considered how social capital helps to shape persistence decisions (Tovar, 2015). In particular, while this study did not find that academic integration including faculty interaction predicts the odds of transfer or degree attainment, there is a growing body of research that suggests that social capital in the form of faculty-student interaction at the community college level improves college GPA amongst community college students generally (Barnett, 2011; Crisp, 2010; Soria, 2013; Tovar, 2013) and Hispanic students specifically (Barnett, 2011; Tovar, 2015; Zell, 2010). Additional research on social capital resources in the form of faculty-student interactions for Hispanic students at the community college level may help to better understand why a gap exists amongst this student population in degree attainment after transferring from a community college.

In addition to understanding how additional social capital in the form of faculty-student interaction impacts Hispanic student persistence, additional research about the effects of receiving financial aid in the form of loans influences Hispanic student persistence decisions. Although federal, state and institutional grants have helped the lowest income students pay for educational costs, grants have not kept pace with the rising costs of higher education (Gross, Zerquera, Inge, & Berry, 2014). As a result, many students have accrued additional loans to cover the shortfall from grants (Chen & DesJardins, 2008; Paulsen & St. John, 2002). However, as previously mentioned, Hispanic students are less likely to accept loan assistance in paying for college (Cunningham & Santiago, 2008; Dowd & Tarek, 2006). Additional research on how tuition costs and receipt of grants or loans, influences Hispanic student persistence decisions is also warranted.

There are several theories that have attempted to explain the complexities of student persistence and degree completion. However, to date, there is no theory that fully explains all

aspects of persistence and degree attainment. As well, there is no theory that explains the complexities of low-income community college beginners' transfer and degree attainment. Following recommendations from previous researchers (Braxton et al., 2004; St. John, 2006), this study used a multi-theoretical approach to help explain the transfer and degree attainment of low-income community college beginners. Using constructs found in the financial nexus between choice and persistence and Bean and Metzner's model of student attrition for non-traditional students, this study developed a conceptual model that considered demographic factors, academic factors, environmental factors, and college experiences. The current study demonstrated that loan assistance increased the odds of transfer and degree attainment for low-income community college beginners. Both theories used as frameworks to this study highlight the influence of finances on student persistence. In the financial nexus between choice and persistence, perceived cost of the institution and the ability to pay once enrolled have influence on persistence decisions. Within Bean and Metzner's model, finances play a key role in persistence decisions. Following the significance of loan assistance within this study, future theory development addressing low-income community college beginners should include financial dimensions.

Implications for Policy and Practice

Some important implications for policy and practice may be drawn from this study. Although community colleges provide access to students who may not otherwise enroll in college, community college administrators should give consideration to how students entering college with weaker academic preparation from high school may need additional support, not only in the form of remedial coursework, but also in other areas to encourage persistence and degree attainment. Using technology, college administrators could direct

students to online resources such as YouTube, Khan Academy or Lynda.com for additional academic preparation. In some cases, students may only need a refresher of information learned in high school. These tools could provide the support students need without adding additional remedial courses to students' schedules that may extend their time at the community college level. In addition, mobile apps and social media could be utilized to provide students with advising if they are attending school part-time or lack the resources to easily get back and forth to the community college campus. There are other ways to provide academic support to students that may not require an additional course or face-to-face contact.

This study demonstrated that students who attend college full-time have increased odds of transfer and degree attainment. Where possible, community college administrators should encourage full-time enrollment for students who attend community college with the intent of transferring and attaining a bachelor's degree. When encouraging full-time attendance, administrators should stress the importance of completing 15 credit hours each semester. Because federal financial aid guidelines require a minimum of 12 credit hours in order to receive the full amount of aid, many colleges define full-time enrollment as enrolling in 12 credit hours per semester (Klempin, 2014). However, students who complete 15 credit hours per semester are more likely to complete a bachelor's degree after transferring from a community college than students taking fewer credits per semester (Monaghan & Attewell, 2014). Yet, a recent survey of state systems and institutions found that fewer than 30% of full-time students at most community colleges were enrolled in 15 credits (Complete College America & Postsecondary Analytics, 2013). Because traditional full-time attendance may not always be possible, colleges may consider offering courses for students at nontraditional

times to allow students who may have other obligations to attend school on a full-time basis. In addition to alternative class times, several colleges have begun providing students with guided pathways to degree completion. Providing students with specific pathways that completely map out courses needed for specific degrees may be able to assist students who are not able to attend full-time. For part-time students in particular, this guided pathway approach will provide students with which courses to take during which semester so they are not taking unnecessary courses as they wait for a specific course to be taught. Providing specific pathways for students may advance students' progress towards degree more quickly. As an alternative, college administrators may consider ways to provide students with other academic and social benefits of attending full-time. With social media, forming community does not have to be done in-person. Social media sites such as Facebook or Twitter could encourage social engagement. Google Hangouts and Skype may allow a student access to a professor's office hours if unable to visit campus.

Another consideration for college administrators is the guidance students receive from advisors when completing requirements for transfer and degree attainment. Advising students receive before and after transferring is essential in easing the transition from high school to college or community college to four-year college (Hood, Hunt, & Haeffele, 2009; Laanan, 2007; Smith, Miller, & Bermeo, 2009). Holistic advising plays an important role in the success of community college students (Allen, Smith, & Muehleck, 2013; Smith & Allen, 2006). Holistic advising attempts to connect students' curricular and co-curricular choices to academic, career, and life goals (Allen, Smith, & Muehleck, 2013). Students not only desire information about specific degree requirements, they also want to be able to make connections to how specific courses will influence career goals in the future (Allen, Smith, &

Muehleck, 2013). Offering holistic advising at the community college level may provide support for all student populations. However, this type of advising could provide the additional assistance that students with family responsibilities and students who identify as Hispanic need in order to transfer successfully and attain a bachelor's degree. Previous studies have demonstrated that student-advisor interactions positively influence student outcomes such as GPA and degree completion (Barnett, 2011; Crisp, 2010; Tovar, 2014). Given the academic concerns of students with families and students who identify as Hispanic, holistic advising allows advising staff to address the needs of the "whole student" (Allen, Smith, & Muehleck, 2013). Intentionally providing holistic advising to students with families and to students who identify as Hispanic may improve the academic outcomes of both populations.

Another consideration for policymakers and administrators is the administration of loans. Loans may provide the additional assistance needed to cover tuition and other expenses not covered by grants and other financial aid (McKinney & Burrridge, 2013). However, community college students who borrow are at greater risk of dropping out before earning any credential (Education Sector, 2012; Gladieux & Perna, 2005). As such, about 9% of community college students are without access to loans because their institutions have elected not to participate in the federal loan program (McKinney & Burrridge, 2013). Although there is much in the popular press about the abundance of student loans and student loan debt, loans in smaller amounts may encourage students to transfer and attain a bachelor's degree. Without loan assistance, students may attend college part-time or work more than 20 hours a week to help cover college expenses (McKinney & Burrridge, 2013). Administrators should give consideration to ensuring that students have access to federal loan

opportunities when necessary. Without access to federal loans, students may accept private loans or use credit cards (both with potentially higher interest rates) to help cover the difference in expenses (McKinney & Burrige, 2013). Administrators should provide opportunities for students to understand the loan received, what expenses the loan will cover, and how students will repay the loan. Dropping out of the institution without earning a credential of any kind will make repaying loans difficult for many low-income students.

As loan assistance is a concern for many students who begin at a community college, administrators and policymakers should consider other ways students may be able to cover college expenses. For example, policymakers may consider how students may earn micro-grants that will help cover book expenses. Students may earn micro-grants or other financial incentives as they complete tasks associated with degree progression. For example, students may earn micro-grants for completing all of their math credits required for a degree or for remaining on the Dean's list for two semesters or for earning a 3.5 cumulative first year college GPA. Small tasks that encourage students to transfer and eventually obtain their degree may motivate many from low-income backgrounds. Another incentive includes opportunities for students to serve in local communities following graduation. Service provided by graduates may provide funding for loan repayment. Following the models of Teach for America or AmeriCorps, these service opportunities not only encourage students to complete their degree, but also encourage students to aid their local communities. Policymakers and administrators should give consideration to how providing incentives will encourage transfer and degree attainment of low-income community college beginners.

Another implication from this study includes support for students with family responsibilities. Students who were married and had dependents had reduced odds of transfer

and degree attainment within this study. College administrators may consider additional support for students with family responsibilities. More recently, colleges have partnered with organizations such as Single Stop. Single Stop establishes campus-based centers to help students determine if they are eligible for public benefits such as food stamps, childcare subsidies, federal financial aid, or tax breaks. Single Stop is able to keep costs low for the college and for students by partnering with existing services such as the United Way or local attorneys who provide pro bono assistance. While community colleges may not be able to offer a full childcare center or food pantry, partnering with organizations such as Single Stop provides support to students who may have family responsibilities. Administrators could also encourage students to start support groups if they do not already exist. Administrators should also encourage faculty and staff to become allies for students. Faculty and staff may have a display in their office that signifies to students with families that they are sensitive to the needs of students in this group. Having the additional support from faculty and staff, may encourage students who have family responsibilities seek information about additional resources available at the college.

Limitations

This research study had limitations which impacted the results of this study. One limitation with this study was use of secondary data analysis and limitation on control of available variables. Because this dissertation used data from a national dataset that was designed for broad and differing research purposes, there were limitations in the variables available for study. For example, this study had to use index composite variables to consider academic and social integration of low-income community college beginners. While limited studies have demonstrated the influence of academic and social integration on community

college students (Barnett, 2011), having specific constructs to measure academic and social integration may have demonstrated greater influence of interactional variables within my models.

Moreover, although this study used data from the most recent version of the BPS study, the BPS study is based on longitudinal data collected from 2003-2009 and does not take into consideration trends and patterns of current student enrollment in higher education. Conclusions drawn from the present study may differ from data collected on students entering higher education today. For example, since 2009, much emphasis has been placed on college completion. A recent proposal to improve college completion includes the Obama administration's proposal for free tuition for the first two years of community college. With free tuition for two years at community colleges already in place in Tennessee, a similar study using recent data on students who have taken advantage of free tuition may yield different results regarding the factors that determine transfer and degree attainment.

This study was also limited by the small number of cases included within analysis. As a result of using listwise deletion, approximately half of the sample was removed from consideration. With the smaller number of cases studied, the results may not be as generalizable to the population of interest. For example, over 70% of the cases studied included students who attended college full-time. This differs from other research on community college beginners that has demonstrated that many community college students attend part-time (Porchea et al., 2010). Related to enrollment intensity, measuring transfer after three years and degree attainment after six years may not allow for part-time students to achieve either milestone. A larger sample size may have included more part-time students that would have made more apparent that the three year and six year milestones were not

long enough time for this population to achieve transfer or degree attainment. A last limitation related to a smaller analyzed sample includes the possibility of Type II errors.

Another limitation was that the independent variables used in this study were measured in the students' first year at the community college. It is possible that the measures for enrollment intensity, loan assistance, grant assistance, employment, family responsibilities, academic integration, and social integration may have changed during the course of students' time in college. This is important to note for enrollment intensity, loan assistance and family responsibilities, as each of these variables influenced transfer and degree attainment of low-income community college beginners within this study. It is possible that a change in any of these variables in subsequent years may have had an influence on the transfer and degree attainment of those studied.

Conclusions

A review of the findings from this study highlight that low-income students still have a tough path towards transfer and degree attainment. This study also confirms that although community colleges provide access to students who may not have otherwise attended postsecondary education, students who begin at community colleges are less likely to transfer or attain a bachelor's degree (Dougherty & Reid, 2007; Goldrick-Rab, 2010; Hagedorn, 2010; Mullin, 2011). Only 15.6% of the community college beginners in the lowest income group successfully transferred three years after initial enrollment, and only 15.2% earned a bachelor's degree within six years of initial enrollment. It is important for community college administrators and future researchers to consider the factors that influence transfer and degree attainment among low-income community college beginners. This study showed that strong scores on the SAT/ACT, full-time attendance, loan assistance, and first year

cumulative college GPA significantly and positively predict the odds of transfer and degree attainment. Conversely, family responsibilities, and in the case of degree attainment, identifying as Hispanic, predicted reduced odds of transfer and attainment. Community colleges serve to provide access to higher education for many students who may not otherwise have access to college.

Additional research should consider within-group differences of low-income community college beginners, how other academic factors influence persistence, and how loans impact persistence. As well, administrators and policymakers should consider additional ways to support students academically, encourage full-time enrollment, financial incentives to encourage completion, and provide support to students with families. Low-income community college beginners have several barriers on their path to transfer and degree completion. But, with the right support, these students can be successful.

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APPENDIX

APPENDIX A

Theory/Perspective	Researchers	Variables/constructs	Variables/constructs in my study
None noted	Pike, Hansen, & Childress, 2014	DV- graduate in 4,5,6 years; IV - sex, race, FGC, non-traditional age, SAT, HS rank, academic intensity measure (coursework), HS academic engagement, expectations for college, help w/fin. aid, help w/study skills, help w/writing skills, help w/math skills hours studying, hours working, likelihood of transfer	Pre-college characteristics - SAT, GPA (rank); external impacts - hours worked
Nora & Cabrera Student/Institution Engagement Model	Arbona & Nora, 2007	parental education, gender, native language, parental expectation about attainment, college plans, attainment expectations, HS curriculum, academic achievement, # peers plan to attend college, type of 1st college attended, full/part - time student, no delay in college entry, continuous enrollment, ratio of hours completed, college GPA, hours worked, contributes to support others	Enrollment status, HS school performance, educational goals, employment, family responsibilities, college GPA
Braxton & Hirschy, 2005; Bean & Metzner, 1985	Attewell, Heil, & Reisel, 2011	HS preparation - highest level of math, HS GPA, SAT; Nontraditional status - part-time Enrollment, delayed entry, independent/dependent	SES, financial aid, work, high school preparation

		student; Financial aid - Pell, Stafford, Perkins, work-study; race, ethnicity, gender; SES - parents' net worth, parents' income, parents' highest education; Integration, working hours, remediation; college type and selectivity	
No framework included	Byun, Irvin, & Meece, 2012	DV - completion; IVs - gender, race/ethnicity, parental education, family income, family structure, number of siblings, parental education expectations, test scores, curriculum intensity, location of institution first attended, sector of institution first attended, selectivity of first institution attended, delay of entry, enrollment intensity, participation in school activities, first-year GPA	First-year GPA, enrollment status, family income, test scores
None noted	An, 2012	DVs - attained any postsecondary degree; attained bachelor's degree; Other variables - dual-enrollment or not; race/ethnicity, gender, parental education, parental occupation, family income, family structure, # of siblings ; significant others on schooling outcomes, college aspirations/expectations, academic indicators, contextual school factors - sector, median household income, racial	Curriculum intensity; parental education

		composition, school climate and course offerings	
Tinto, Bean & Metzner, Braxton et al.	Mamiseishvili & Deggs, 2013	Gender, race/ethnicity, parents' education level, delayed enrollment; first-year GPA; remedial math/English/reading/writing, distance education, academic integration, social integration; financial aid, enrollment intensity, hours of employment; degree aspirations, being financially well-off, having steady work, being a community leader	GPA, enrollment intensity/status, degree expectations, hours worked, parents' education
College persistence lit, empirical evidence on community college student outcomes, theories in psychology	Wang, 2009	Gender, race/ethnicity, SES, high school curriculum, locus of control, self-concept, baccalaureate aspirations, enrollment intensity, remediation, college involvement, GPA at cc, work hours, having dependents	SES, high school curriculum, baccalaureate aspirations, enrollment intensity, GPA, work hours, having dependents
College persistence lit, empirical evidence on community college student outcomes	Porchea, Allen, Robbins, & Phelps, 2010	Standardized test scores, high school GPA, academic discipline, academic self-confidence, commitment to college, steadiness, social activity, social connection, age, race/ethnicity, gender, parents' income, parents' education level, enrollment intensity,	High school academic preparation, parents' income, parents' education level, enrollment intensity, degree expectation, hours working

		degree expectation, distance from home, hours working, institutional characteristics, institution type	
Tinto; Bean & Metzner	Wood, Nevarez, & Hilton, 2012	age, gender, race/ethnicity, high school GPA, parents' education, meetings with faculty, talking with faculty, meeting with an advisor, participation in study groups; attend fine arts activities, participation in sports, finances, hours worked, dependent children, financial help from parents	High school GPA, parents' education, work, having dependents
Tinto-integration; Rendon-validation	Barnett, 2011	age, gender, race/ethnicity, mother's education, number of credits taken in a semester, College GPA, faculty validation, academic integration	consider using academic integration in some way
	St. John, 1990; St. John, Paulsen & Starkey, 1996	College costs and the availability of aid influence decision to enroll and decision to persist.	Finances - availability of aid, fixed costs, living expenses, mother's education, academic preparation
	Mbadugha, 2001	Community college students more sensitive to tuition. African American students more likely to persist when attending part-time.	Enrollment status— part-time vs. full-time
	Hwang, 2003	Considered how demographics, socioeconomic status and college performance interacted with the financial nexus model	Influence of tuition on persistence
	Felts, 2008	How a choice to attend a four-year versus a two-	First semester GPA

		<p>year influences persistence. Found that transfer GPA, transfer hours, completion of college algebra, completion of freshmen English and first semester GPA had a positive effect on baccalaureate attainment for community college transfer students</p>	
	<p>St. John, Paulsen, and Carter, 2005</p>	<p>Used 16 predictor variables to determine college choice and persistence patterns between African American students and White students. Found that African American students place higher value on financial aid than white students. Financial aid was positively associated with persistence.</p>	<p>Receipt of financial aid</p>
<p>Bean & Metzner, 1985 non-traditional student attrition</p>	<p>Stahl & Pavel, 1992</p>	<p>Did not find a goodness of fit with Bean & Metzner on community college students. Used the following variables from Bean and Metzner: cumulative GPA, semester GPA, satisfaction, intent to transfer, utility, study habits, intent to re-enroll, advisement, finances, transfer difficulty, absences, goal commitment, encouragement, stress, available courses, family responsibility, major certainty, and employment.</p>	<p>GPA, financial aid, family responsibility, employment</p>

	Nippert, 2000	<p>Considered what influenced degree attainment of two-year college beginners. Considered fourteen variables; six had a significant impact on degree attainment - sex, high school academic record, hours of employment, college academic activities, college grade point average, and students choosing to re-enroll in their first-year college.</p>	High school record, GPA
	Cabrera et al, 2012	<p>Background characteristics, support received in high school, academic resources acquired prior to college, degree attainment aspirations, pathways to and through college, college experiences, financial aid, and parental responsibilities have been known to influence degree completion of low-income students</p>	Goals/aspirations, financial aid