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COMMUNITY COLLEGES AS A PATH TO BACCALAUREATE DEGREE ATTAINMENT AND SOCIAL MOBILITY: ARE COMMUNITY COLLEGES FULFILLING THIS ROLE?

by

Christopher John Button

An Abstract

Of a thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Psychological and Quantitative Foundations (Counseling Psychology) in the Graduate College of The University of Iowa

December 2009

Thesis Supervisor: Professor John S. Westefeld

ABSTRACT

There is a significant degree of controversy surrounding the transfer mission of community colleges. Specifically, many researchers have suggested that these institutions divert the educational attainments, and thus social mobility, of disadvantaged groups (Brint & Karabel, 1989; Dougherty, 1987, 1992, 1994; Karabel, 1972). Others suggest that community colleges provide disadvantaged individuals, who would have otherwise failed to consider a postsecondary education, with a viable path by which to attain a four-year degree (Cohen & Brawer, 1996; Hilmer, 1997; Pascarella & Terenzini, 2005). This study sought to determine whether the path to social mobility, via educational attainment, differed for bachelor's degree aspirants who commenced their postsecondary education at a community college, versus a four-year institution, in terms of enrollment outcomes three-years later (i.e., at a four-year institution, a selective or highly-selective four-year institution, and/or a privately-controlled four-year institution). Specifically, hierarchical logistic regression analyses were used to determine whether the effect of initial enrollment location on the odds of year-four enrollment outcomes depended on student characteristics (i.e., race/ethnicity, generational status, family income, prior academic achievements, and/or psychosocial factors) among a large representative sample of students who started their postsecondary education at either a community college or a four-year institution in the fall semester of 2003. Results suggest that student characteristics do not detrimentally modify the effect of initial community college enrollment on students' odds of later enrollment outcomes. In addition, the results suggest that after accounting for the effects of initial enrollment location and other predictors, the effect of standardized test scores appears to significantly increase the odds of being enrolled at a selective or highly selective four-year institution for students who initially matriculated to a community college rather than a four-year institution. The findings are discussed in terms of implications for consumers of higher education, vocational psychologists, as well as postsecondary institutions and educational policy.

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COMMUNITY COLLEGES AS A PATH TO BACCALAUREATE DEGREE ATTAINMENT AND SOCIAL MOBILITY: ARE COMMUNITY COLLEGES FULFILLING THIS ROLE?

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Christopher John Button

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December 2009

Thesis Supervisor: Professor John S. Westefeld

Graduate College
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CERTIFICATE OF APPROVAL

PH.D. THESIS

This is to certify that the Ph.D. thesis of

Christopher John Button

has been approved by the Examining Committee for the thesis requirement for the Doctor of Philosophy degree in Psychological and Quantitative Foundations (Counseling Psychology) at the December 2009 graduation.

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Jeff Allen

To Kate, Riley, Reese, and everyone who helped along the path.

The time has come to reaffirm our enduring spirit; to choose our better history; to carry forward that precious gift, that noble idea, passed on from generation to generation: the God-given promise that all are equal, all are free, and all deserve a chance to pursue their full measure of happiness.

Barack Obama
Presidential Inaugural Address

ACKNOWLEDGMENTS

I would like to extend my deep gratitude to Dr. Jeff Allen for his support throughout the course of this project, his insight, and perspective. To Dr. Steven B. Robbins and ACT Inc., thank you for taking a chance on me early in my graduate education. I am forever grateful for the opportunity to have worked with you and learned from you. My gratitude for your support and the use of this data cannot be fully expressed, thank you.

I want to express my gratitude to past and present faculty, who always saw in me something more than I thought possible. In particular, I want to extend my thanks to John Westefeld, Saba Ali, Pamela Steinke, Mary Mitchell, David Roe, and Dennis Hendrickson. Thank you for facilitating my education and providing me with the knowledge of how to move ahead educationally, without your guidance this study would not have been possible.

I would like to extend a special thanks to Benjamin Tallman. Thank you for all of the time and effort you expended assisting me. Your feedback and support were invaluable. Thank you. Finally, I would like to thank my late father for his enduring pursuit of the American Dream. He immigrated to this country and never lost hope that he could attain his dream for a better life. He bolstered my confidence and always encouraged me to follow my dreams. He provided the backdrop for this study, thank you dad.

ABSTRACT

There is a significant degree of controversy surrounding the transfer mission of community colleges. Specifically, many researchers have suggested that these institutions divert the educational attainments, and thus social mobility, of disadvantaged groups (Brint & Karabel, 1989; Dougherty, 1987, 1992, 1994; Karabel, 1972). Others suggest that community colleges provide disadvantaged individuals, who would have otherwise failed to consider a postsecondary education, with a viable path by which to attain a four-year degree (Cohen & Brawer, 1996; Hilmer, 1997; Pascarella & Terenzini, 2005). This study sought to determine whether the path to social mobility, via educational attainment, differed for bachelor's degree aspirants who commenced their postsecondary education at a community college, versus a four-year institution, in terms of enrollment outcomes three-years later (i.e., at a four-year institution, a selective or highly-selective four-year institution, and/or a privately-controlled four-year institution). Specifically, hierarchical logistic regression analyses were used to determine whether the effect of initial enrollment location on the odds of year-four enrollment outcomes depended on student characteristics (i.e., race/ethnicity, generational status, family income, prior academic achievements, and/or psychosocial factors) among a large representative sample of students who started their postsecondary education at either a community college or a four-year institution in the fall semester of 2003. Results suggest that student characteristics do not detrimentally modify the effect of initial community college enrollment on students' odds of later enrollment outcomes. In addition, the results suggest that after accounting for the effects of initial enrollment location and other predictors, the effect of standardized test scores appears to significantly increase the odds of being enrolled at a selective or highly selective four-year institution for students who initially matriculated to a community college rather than a four-year institution. The findings are discussed in terms of implications for consumers of higher education, vocational psychologists, as well as postsecondary institutions and educational policy.

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CHAPTER ONE: INTRODUCTION

The United States class system is believed to be an open contest of social mobility (Abowitz, 2005; Tsui, 2003), where citizens are able to move from one social class level to the next based upon ability and achievement. More explicitly, social class is posited to be bestowed upon individuals, not for their family background and the subsequent social class into which they were born, but rather for that which they have earned. This view persists among contemporary college students who, like generations before them, believe in the "American dream" (Abowitz, 2005, Dominitz & Manski, 1999). In this spirit, the United States is believed to be a meritocracy. American citizens are presumed to be awarded for their work and accomplishments rather than for their familial bloodlines, inherited privilege, and family social connections.

In American society, higher education is recognized as providing the primary route by which to attain upward social mobility (Abowitz, 2005; Pascarella & Terenzini, 1991, 2005; Tsui, 2003). For those who tend to be economically and socially disadvantaged; community colleges, with their open door admission policies, were intended to provide these individuals with a second chance and an entry point into higher education by which they might gain upward social mobility via their educational attainment (Cohen & Brawer, 1989, 1996; Grubb, 1991; Pascarella & Terenzini, 2005). However, longstanding controversy persists as to whether community colleges actually provide an entry point into higher education, promote baccalaureate degree attainment and social mobility, and/or moderate social stratification in American society (cf., Brint & Karabel, 1989; Cohen & Brawer, 1989, 1996; Dougherty, 1987, 1991, 1992, 1994; Karabel, 1972).

Overview

This dissertation will focus on the community college population by first providing a review of the literature pertaining to social mobility, and establish educational attainment as the primary route by which to gain upward social mobility in

American society. Next, because the bachelor's degree is viewed as the principle ingredient to entering the American middle class (Cabrera, Burkum, & La Nasa, 2005; Pascarella & Terenzini, 2005), this review will explore the effects of attending four-year institutions of varying institutional control and selectivity on social mobility related-outcomes (i.e., educational attainment, occupational status, and income). Following this, the role of the American community college in the process of educational attainment and social mobility will be discussed. As the primary point of entry into higher education for disadvantaged members of American society, it is important to determine the extent to which these institutions either promote or diminish community college students' four-year degree attainments and other social mobility-related outcomes; particularly among disadvantaged community college students. In this regard, this review will explore the effects of initiating one's postsecondary education at a community college, rather than a four-year institution, on students' educational attainment, occupational status, and income. As the primary route to social mobility for disadvantaged groups, further examination of the literature will be provided in terms of the conditional effects of community colleges on students' educational attainments. Specifically, this review will explore whether the effects of initial community college enrollment on educational attainment depend on student characteristics (i.e., race, family income, generational status, and academic ability). Finally, this review will include an analysis of psychosocial and study skill variables related to educational attainment. This review will address limitations to the current literature and conclude by introducing a study examining the effects of initial enrollment location on students' educational attainment.

Background

As of 1996, community colleges made up about 28% of the total number of postsecondary institutions (i.e., of both publicly- and privately-controlled) and approximately 39% of all public postsecondary institutions in the United States (National Center for Educational Statistics [NCES], 1996). Among all students enrolled in higher

education in 2003, approximately 43% were enrolled at community colleges (Horn, Nevill, & Griffith, 2006). The American community college system is comprised of 1,173 public and independent community colleges that typically receive funding from five sources (American Association of Community Colleges, 2008). In general, individual states provide the bulk of monetary funds (37%), followed by local funding from the community that the college serves (21%), tuition and fees (17%), federal funds (16%), and the remaining funds coming from other sources (9%; AACC, 2008). Due to state and local financial support, these community colleges possess multiple and varied missions. The particular roles (which comprise the mission of the college) fulfilled by a certain community college depend on the idiosyncratic needs of the given community served by the college (AACC, 2008). Although there may be significant overlap in the mission between one institution and the next, no two community colleges serve identical communities. Therefore, it is unlikely that they share an indistinguishable mission.

Roles of the American Community College

The American Association of Community Colleges (2008) identifies four primary roles common to the mission of most community colleges. Again, the extent to which an individual institution serves each role depends on the community's needs and the mission of the college. First, at the broadest level, the AACC (2008) states that community colleges provide open access to postsecondary education for all people regardless of income, background, or prior academic achievements. Second, community colleges serve to prepare students for transfer into four-year colleges and universities (i.e., to attain a baccalaureate degree). Third, community colleges offer workforce development and skills training to community members wishing to gain important work-related skills (e.g., certification as a fork-lift operator). Of note, both the second and third roles identified here may include the conferring of an associate's degree. Finally, community colleges provide community members with opportunities to enroll in non-credit programs for

ongoing professional and personal growth and development, recertification and retraining skills courses, programs to enrich the community, and cultural programs and activities.

Prevalence of Community College Roles

To gain an understanding of the extent to which community colleges generally serve each of these roles, it is appropriate to examine the percentage of students drawn from national samples that enroll for these reasons. In 1987, Dougherty reviewed the literature and conservatively estimated that among all community college entrants nearly 30% to 40% of community college entrants enrolled in pursuit of a baccalaureate degree. He estimated that another 30% to 40% sought an associate's degree and the remaining 20% to 30% enrolled for the purpose of completing adult and/or community education courses. More recently, Horn, Nevill, and Griffith (2006) substantiated Dougherty's (1987) estimates using a nationally representative sample of nearly 25,000 community college students who were enrolled in two-year institutions between July 1, 2003 and June 30, 2004. They found that among those sampled, 36.5% of community college students enrolled with the intent of eventually attaining a bachelor's degree, approximately 42% sought an associate's degree, and the remaining students were enrolled for reasons other than degree completion (e.g., personal/professional growth or development, and community enrichment programs).

The Transfer Mission

For disadvantaged populations, community colleges have traditionally represented the most likely entry point into higher education (Alfonso, 2006; Cohen & Brawer, 1989; Dougherty, 1987, 1992; Horn et al., 2006; Lea, Sedlacek, Stewart, 1979; McCool, 1984; McDonough, 1997; Pascarella & Terenzini, 1991, 2005). These disadvantaged groups tend to come from families of low social class, be of an ethnic or racial minority, and/or represent the first in their family to attend college (Pascarella & Terenzini, 2005). As the most common entry point into higher education for disadvantaged students, the effectiveness of community colleges in promoting the educational persistence, associate's

degree attainment, and transfer of these students into the upper echelons of the educational hierarchy (i.e., to four-year institutions) is important to the attainment of higher levels of occupational status and income (Pascarella & Terenzini, 1991).

When students, who aspire to a bachelor's degree, begin their postsecondary education in a community college, transferring to a four-year institution is a prerequisite in order to attain that degree. However, researchers in the field suggest that initial enrollment at a community college tends to diminish students' degree aspirations by roughly 40%; and decrease the likelihood of attaining a bachelor's degree by as much as 33%, after controlling for degree aspirations and ability (Alfonso, 2006; Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1998; Pascarella & Terenzini, 1991, 2005). In terms of actual transfer rates, great variability exists in the literature concerning how many students actually make the transition from a community college into a four-year institution. Transfer rate estimates range from as low as 12% to as high as 40% (Alfonso, 2006; Cohen & Brawer, 1989, 1996; Grubb, 1991; Hoachlander, Sikora, & Horn, 2003; NCES, 1996; Pincus & Archer, 1989). Much the literature indicates that the lower percentage offered is more representative of actual transfer rates (Cohen & Brawer, 1989, 1996; Hoachlander et al., 2003; NCES, 1996; Pincus & Archer, 1989). Regardless of the actual rate, there is a clear disparity between the estimated percentage of students who enter the community college with bachelor's degree aspirations and the percentage who successfully make the prerequisite step of transferring to a four-year institution (e.g., 56% vs. 37%, respectively; Alfonso, 2006).

Further, research indicates that those students who successfully make the transition from a community college to bachelor's degree granting institution tend to closely resemble more advantaged college students. They are prone to have greater economic resources and parents who have attained at least a bachelor's degree. Additionally, they are typically younger, White, and male. They are usually more academically and socially integrated, academic-oriented, continuously enrolled, and

possess higher educational aspirations (Lee & Frank, 1990; Nora & Rendon, 1990; Striplin, 1999; Townsend, McNerny, & Arnold, 1993).

Recent Community College Enrollment Trends

Despite the noted disparity in eventual educational attainment, a significant percentage of students continue to enroll in community colleges each year. During the 2003-2004 academic year, Horn and colleagues (2006) estimated that community colleges enrolled nearly 43% of the entire U.S. undergraduate student population. This equates to nearly 7.6 million students, who enrolled for a variety of educational reasons. In considering the varying roles comprising the idiosyncratic missions of community colleges, the findings of Horn, Nevill, and Griffith (2006), suggest that roughly 2.8 million students (i.e., 36.5%) were enrolled in community colleges during the 2003-2004 school year with the ultimate goal of transferring to a four-year institution and earning a bachelor's degree. Further, nearly 6 million sought to attain a college degree, whether it was an associate's or a bachelor's degree (i.e., 36.5% and 42%, respectively; Horn et al., 2006). This finding suggests that the transfer mission is a significant role made available to community college entrants. Therefore, the effectiveness of community colleges in fulfilling this role merits further consideration given the significant number of students who enroll for this reason.

Purpose

Although a significant amount of research exists concerning the effects of initial enrollment at a community college on the educational attainment and social mobility of students (as evidenced by gains in occupational status and income), very little evidence exists that considers the differential effects of initial community college enrollment on the educational persistence and transfer behavior of disadvantaged and advantaged students into four-year degree-granting institutions. A review of the economic literature indicates that, after controlling for the effects of individual characteristics and academic ability, the occupational status and economic returns on education tend to be greater for

those students who graduate from the Nation's most prestigious, selective, and private institutions (Brewer, Eide, & Ehrenberg, 1999; Ehrenberg, 2004; Eide, Brewer, & Ehernberg, 1998; Pascarella & Terenzini, 2005). Therefore, the purpose of this study is to examine whether initial community college attendance affects the paths of upward socially-mobile college students. In particular, this study seeks to determine whether the effects of initial community college enrollment on beginning of year-four enrollment outcomes differ for disadvantaged versus advantaged students who begin their college careers at community colleges rather than four-year institutions.

Implications

The results of this study will indicate whether the effects of initial community college enrollment on the enrollment behavior of bachelor's degree seeking students three years later at (a) four-year institutions, (b) selective or highly selective four-year institutions, and (c) privately-controlled four-year institutions depends on student characteristics. Should the results indicate that community colleges have a significant and meaningful effect on these outcomes, particularly among disadvantaged bachelor's degree aspirants, these findings may have significant implications for community colleges, four-year institutions, and state educational policies; community college students; and vocational psychologists and guidance counselors who work with bachelor's degree seeking students. For the community colleges and four-year institutions, the results of this study will be informative regarding the effectiveness of these institutions in facilitating the educational attainment and transfer of various types of students who seek a four-year degree. In this regard, the results may have significant implications on institutional policy and practice. For state and local educational and funding policies, the results may provide valuable information that aids in decision-making by indicating where to place funding and how to focus policy so as to ensure that these institutions fulfill their purpose for underprivileged members of American society. For individuals seeking a four-year degree, the results will provide for more informed

consumers of postsecondary education. Many disadvantaged students commence pursuit of a four-year degree at the community college level in order to offset the higher costs typically associated with four-year institutions (McDonough, 1997; Walpole, 2003). The results will indicate which path, a community college versus a four-year institution, provides for the greatest degree of educational attainment and potential for social mobility. Should the results of this study indicate that effects of community colleges on social mobility outcomes depend on student characteristics, the implications for affected students will be discussed. Finally, the results of this study will inform the practice and research of vocational psychologists and guidance counselors working with both privileged and underprivileged bachelor's degree aspiring students. The outcomes will provide greater information regarding the effectiveness of community colleges in preparing students for transfer into the upper echelons of higher education, which will afford for greater accuracy in counseling and guidance.

Definitions

Key terms related to this literature are provided below. The definition of the term *social mobility* will be thoroughly defined and discussed separately at the beginning of Chapter Two, as the definition provides a foundation for the remaining literature review. Though the definitions provided below are informative, they are not meant to be exhaustive. Additional terms will be defined as the need arises throughout the second chapter.

Community College

The term community college refers to all two-year institutions; which includes all two-year vocational, technical, and traditional academic institutions. The terms *two-year institution* and *community college* will be used interchangeably throughout this review.

Four-year Institution

Four-year institution refers to any baccalaureate degree-granting academic institution.

Social Class

Consistent with the definition provided by Liu (2001), social class refers to an individual's objectively determined position within an economic hierarchy. His or her position is established by the objective measures of one's income level, educational attainment, and occupational status. Included in the definition of social class is an individual's relative awareness of his or her location in the economic hierarchy and those of a similar position (Liu, Ali, Soleck, Hopps, Dunston, & Pickett, 2004).

Socioeconomic Status

Socioeconomic status is defined as "a person's perceived place in an economic hierarchy based on subjective indices such as prestige, lifestyle, and control of resources" (Liu et al., 2004, p. 8).

Family Social Class

College students' family social class has evolved in the literature alongside changes in the American household. In older articles, family social class referred to the education level of one's parents, family income, and the occupational status of one's father (Karabel & Astin, 1975; Smart, 1986). More recently, the definition has been expanded to include the educational, income, and/or occupational levels of one's father and/or mother (cf., Nam, 2004; Robbins, Allen, Casillas, Peterson, & Le, 2006; Walpole, 2003).

Generational Status

Pike and Kuh (2005) define first-generation college students as college or university students who come from homes where no parent or legal guardian has earned a baccalaureate degree. They define second-generation students as those students who have at least one parent or legal guardian in their family who has earned a baccalaureate degree. These definitions are consistent with other researchers who have examined the effects of college on first-generation students (e.g., London, 1996; Mitchell, 1997).

Enrollment Status

Enrollment status refers to full-time or part-time student enrollment patterns.

Historically Underrepresented/Underprivileged Students

The literature indicates that several groups are considered underrepresented and underprivileged in higher education. These disadvantaged college and university student groups have traditionally included females, racial/ethnic minorities, first-generation college students, and individuals of low income (McDonough, 1997; Perna, 2005; Pike & Kuh, 2005; Striplin, 1999; Walpole; 2003). Although females continue to be underrepresented in terms of professional and doctoral degrees earned (NCES, 2003), they now outnumber males in terms of college enrollment and associate's, bachelor's, and master's degrees earned (Baum & Payea, 2004; NCES, 2003). Given the noted success in educational attainment, females are not considered to be an underrepresented and underprivileged group for the purpose of this review and study.

Institutional Selectivity

Institutional selectivity is typically defined in the literature by one or more of the following (a) *institution admissions policy*, as determined by the average academic achievement of admitted students in terms of SAT/ACT scores, high school grades, and/or high school rank; (b) *institutional resources*, as measured by the school's endowment, facilities, and per student expenditures; and (c) *institutional prestige* or *reputation ratings* (e.g., annual rankings by *U.S. News and World Report*; Pascarella & Terenzini, 1991). Of the definitions provided, Pascarella and Terenzini (2005) conclude that an institution's admissions policy is the most commonly used means by which to assess institutional selectivity in the literature of the 1990's. For this reason, institutional selectivity shall be defined by an institution's admissions policy, consistent with Pascarella and Terenzini (2005).

Occupational Status

Pascarella and Terenzini (2005) define occupational status as “a hierarchy of occupations that reflects their prestige or desirability” (p.449). The level of education and income associated with a given occupation is often closely and linearly related to the status of a given occupation. As the required education level rises for a given occupation, so follows the status of that occupation. A similar pattern emerges concerning income level and occupational status. Occupations are often prescribed an associated status level or a *Socio-Economic Index* (SEI) score based upon the number of individuals within a given profession that have attained a certain level of education and/or income (Stevens & Featherman, 1981).

Income Level

Income level refers to both a predictor variable (i.e., family income) and an outcome variable (i.e., an individual’s post-college earnings). Income level is defined by one’s annual average individual or household earnings. For the purpose of this study, family income level is used as a predictor variable among this sample, which is restricted to financially dependent college students; that is, students who are considered financially dependent upon their parents or legal guardians. In a few studies income may refer to more proximal levels of earnings such as monthly, weekly, or hourly wages (e.g., Brewer et al., 1999). In such instances, clarification is provided. The terms *income* and *earnings* are used interchangeably throughout this review.

Educational Attainment

Educational attainment refers to the highest number of years completed in school and/or the highest level of degree earned (Pascarella & Terenzini, 1991, 2005; Smart, 1986; Whitaker & Pascarella, 1994).

Now that commonly used terms have been defined, this review turns to an in-depth review of the literature.

CHAPTER TWO: LITERATURE REVIEW

Overview

It has been posited by numerous researchers that postsecondary educational attainment is the principle route by which individuals of lower social class may attain upward social mobility (Baum & Payea, 2004; Dominitz & Manski, 1999; Karabel & Astin, 1975; Pascarella & Terenzini, 1991, 2005; Smart, 1986; Tsui, 2003; Van de Werfhorst, 2002). As such, many believe that one of the primary roles of community colleges is to provide a gateway into higher education for disadvantaged members of American society (Dougherty, 1987; Karabel, 1972; Pascarella & Terenzini, 1991, 2005; Tsui, 2003). Disadvantaged individuals within higher education are traditionally defined as being of minority status, from backgrounds of low family social class, and/or first-generation college students (Pascarella & Terenzini, 2005). For many of these less privileged individuals, the community college system provides the most likely point at which to begin their postsecondary education (Cohen & Brawer, 1989; Dougherty, 1987, 1992; Horn et al., 2006; McDonough, 1997; Pascarella & Terenzini, 1991, 2005).

However, much debate exists as to whether community colleges produce equal opportunities for educational attainment and thus, upward social mobility. Numerous researchers over the past few decades have opined that community colleges impede upward mobility and perpetuate social class differences via diminished educational aspirations, reduced persistence in the system of higher education, lower bachelor's degree attainment rates, a decreased likelihood of entering occupations of high status, and an increased probability of entering vocationally-oriented educational tracks (Brint & Karabel, 1989; Dougherty, 1987, 1992, 1994; Karabel, 1972; Monk-Turner, 1988, 1990; Whitaker & Pascarella, 1994). Conversely, others posit that community colleges bring postsecondary education within the reach of individuals who may not otherwise consider higher education, thereby increasing the educational attainment and social mobility of an

underserved and underprivileged population (Cohen & Brawer, 1996; Hilmer, 1997; Pascarella & Terenzini, 2005).

Purpose of the Literature Review

The purpose of this review is to examine the literature pertaining to the effects of higher education on the educational attainment and subsequent social mobility of college students. This review will define the important role of educational attainment as it relates to the process of upward social mobility. As such, it will include an examination of the evidence supporting and refuting the effectiveness of community colleges in producing equal gains in educational attainment and in factors related to social mobility, such as occupational status and income level.

The first half of this review supports the importance of educational attainment in the process of upward social mobility. The review will define social mobility as it is used within the field of higher education, discuss common means by which to measure social mobility, provide an overview of models of social mobility, and briefly examine factors related to upward social mobility. As noted earlier, educational attainment is considered by many to be the primary route by which to acquire social mobility (Baum & Payea, 2004; Dominitz & Manski, 1999; Karabel & Astin, 1975; Pascarella & Terenzini, 1991, 2005; Smart, 1986; Tsui, 2003; Van de Werfhorst, 2002). As such, the direct and mediating effects of educational attainment on social mobility-related outcomes will be defined and discussed. Specifically, this will include an examination of the effects of educational attainment on an individual's income level and occupational status attainment, both of which are considered to be central to the social mobility process (Pascarella & Terenzini, 1991). Next, the between-effects of academic institutions on students' educational attainment and social mobility will be analyzed.

After establishing educational attainment as the primary route to social mobility, the second half of the literature review focuses on delineating the effects of initial enrollment location (at two-year institutions versus four-year institutions) on college

students' educational attainment and social mobility. It will begin with a discussion of the role of community colleges in American society and the American higher education system. Next, an examination of the evidence supporting and refuting the effectiveness of community colleges as a route to educational attainment will be provided, as indicated by the educational attainment and social mobility of students who initially enroll at two-year versus four-year institutions. Consideration will be given to the within-effects of community colleges on proximal measures of educational attainment (i.e., dropout, graduation, and transfer behavior) across varying demographic groups. Finally, the review will conclude with a discussion of psychosocial and study skill factors important to students' educational outcomes, specifically academic persistence and performance.

Scope of the Literature Review

Prior to the 1990's, literature primarily focused on traditional full-time college students who tended to be White, middle-class, and between the ages of 18 and 22 (Pascarella & Terenzini, 2005). It is suggested that a large portion of the literature before this date failed to consider the conditional effects of higher education on underrepresented and underprivileged factions of the college student body (Pascarella & Terenzini, 2005). With a few notable exceptions (e.g., Karabel & Astin, 1975), the primary literature base from which this review draws was produced after 1990. As Pascarella and Terenzini (2005) noted:

> …the literature of the 1990's has shifted its focus in important ways to reflect the changing and increasingly diverse national undergraduate student body. Thus, we witness an appreciably greater volume of evidence in the 1990's that attempts to account for variations in many factors – such as age, work responsibilities, ethnicity, sex, full- or part-time (or even interrupted) attendance, and resident versus commuter status – in estimating the impact of college (p. 2).

Given the breadth of the literature examining the effects of higher education on the social mobility of students; this review employs the seminal work of Pascarella and Terenzini (2005), who reviewed and synthesized nearly 2,500 studies, published after 1990, which considered the effects of college on students. Where it is appropriate and when more recent research is available, this review expands upon the work of Pascarella

and Terenzini and incorporates new research findings from the field. This review now turns to an operational definition of social mobility, which will serve to segue into the broader literature review.

Social Mobility

A review of the literature indicates that social mobility is a commonly used, widely measured, and inconsistently defined construct. In its broadest sense, social mobility is defined by the degree of change that occurs in one's occupational status and income level (Pascarella & Terenzini, 1991). In this regard, upward social mobility concerns the extent to which children from disadvantaged backgrounds can cross social class lines (i.e., change their position within the economic hierarchy) and become less disadvantaged than their parents (Nam, 2004). In the field of higher education, social mobility is commonly and more specifically defined by the degree of change between a student's pre-college family social class level (i.e., traditionally defined by parents' educational level, annual parental income, and father's occupational status) and the student's post-college social class level (i.e., as defined by the highest degree he or she earned, personal income level, and the occupational status of his or her current job; Smart & Pascarella, 1986). As previously discussed, social class is defined by one's position in an economic hierarchy as determined objectively by his or her educational attainment, occupational status, and income level (cf., Liu, 2001). Further, college students traditionally enter postsecondary education with a lack of occupational status and income independent of their parents (Pascarella & Terenzini, 1991, 2005). Given the aforementioned, *social mobility* is best defined among the college student population as the degree of change in one's position within the economic hierarchy as measured by the difference between his or her pre-college family social class level and his or her post-college social class level. The direction of change can be either positive (i.e., upward social mobility) or negative (i.e., downward social mobility).

Measurement of Social Mobility in the Literature

Prior research and literature reviews concerning the measurement of social mobility among college students primarily center on changes or discrepancies in distal outcomes associated with social mobility including variations in the educational attainment, occupational status, and/or level of income between (a) college students and their family of origin (e.g., Deary, Taylor, Hart, Wilson, Smith, Blane, et al., 2005; Gittleman & Joyce, 1999); (b) college students of similar backgrounds who either begin their postsecondary education at two-year or four-year academic institutions (e.g., Dougherty, 1987; 1992; Hilmer, 2000; Perna, 2005; Whitaker & Pascarella, 1994); (c) college students of varying background characteristics (e.g., Karabel & Astin, 1975; Nam, 2004; Perna, 2005; Whitaker & Pascarella, 1994; Walpole, 2003); or (d) college students who graduated from baccalaureate degree granting institutions of varying institutional selectivity and type of institutional control (e.g., Brewer et al., 1999; Tsui, 2003). A fifth method includes predictive models of social mobility-related outcomes; including varying background characteristics, educational experiences, levels of degree attainment, and/or institutional characteristics (e.g., Sewell, Haller, & Portes, 1969; Smart, 1986; Smart & Pascarella, 1986). A sixth means by which to examine social mobility involves an integration of the existing literature via comprehensive literature reviews (e.g., Ehrenberg, 2004; Pascarella & Terenzini, 1991, 2005). Finally, much research has been conducted on the immediate impact of two-year institutions on the educational attainment process as measured by proximal college outcomes such as dropout, graduation, and transfer behavior across varying individual and institution characteristics (e.g., Bailey & Weininger, 2002; Clagett, 1996; Feldman, 1993; Ganderton & Santos, 1995; Hilmer, 1997; Lee & Frank, 1990; Nunez & Cuccaro-Alamin, 1998). These proximal outcomes are all connected to different levels of educational attainment, and thereby inherently linked to variations in social mobility (Abowitz, 2005; Pascarella & Terenzini, 1991, 2005; Tsui, 2003; Van de Werfhorst, 2002).

Models of Social Mobility

Models of social mobility are based on the occupational attainment model of Blau and Duncan (1967) and the Wisconsin social-psychological model of status attainment (Sewell et al., 1969). These models and the expansion of these models by others (cf., Featherman & Carter, 1976; Jencks, Bartlett, Corcoran, Crouse, Eaglesfield, Jackson, et al., 1979) posit that status attainment and increased earnings occur over the course of an individual's lifetime. As such, these researchers and several reviews (Carnevale & Fry, 2000; Knox, Lindsay, & Kolb, 1993; Pascarella & Terenzini, 2005) indicate that six key factors are associated with experienced degrees of social mobility including one's (a) individual characteristics and abilities, (b) family background characteristics, (c) level of educational attainment, (d) occupational status, (e) level of income, and (f) social and academic influences.

Educational Attainment as the Primary Route to Social Mobility

As many researchers have noted, postsecondary educational attainment is the primary route to social mobility and it has been found to mediate the effects of varying family background characteristics, individual characteristics and abilities, and experienced social and educational influences on social mobility outcomes (Baum & Payea, 2004; Dominitz & Manski, 1999; Karabel & Astin, 1975; Pascarella & Terenzini, 1991, 2005; Smart, 1986; Tsui, 2003; Van de Werfhorst, 2002). Pascarella and Terenzini (1991) identified postsecondary educational attainment as "inextricably linked" to social mobility and as the "passport to the American middle class" (p. 369). The baccalaureate degree, in particular, is viewed as the key determinant of one's eventual occupational status and income (Cabrera et al., 2005; Pascarella & Terenzini, 2005); and it increasingly influences the extent to which one will realize upward social mobility (Dominitz & Manski, 1999). As such, the primary role fulfilled by institutions of higher education is the provision of education and degree certification. Educational attainment is

believed to exert both direct and mediating effects on social mobility outcomes (Pascarella & Terenzini, 1991, 2005). Given the importance of educational attainment to the social mobility of American society, it is prudent to further examine how educational attainment affects social mobility.

Direct Effects of Educational Attainment on Social Mobility

Educational attainment directly influences social mobility by enhancing one's occupational status, social status, and income irrespective of one's gender, race, and/or family social class (Pascarella & Terenzini, 1991, 2005; Stevens & Featherman, 1981). Evidence supporting the prominence of education in this regard is manifest in the fact that high levels of educational attainment are a prerequisite to entering high status and high income occupations (e.g., a physician, lawyer, or chief executive officer; Stevens & Featherman, 1981). For example, Smart (1986) concluded that possessing a baccalaureate degree opens the door to occupations of higher status and increased levels of income. He found that educational attainment significantly influences the occupational status of both professional and non-professional workers. As expected, individuals employed in professional occupations had attained higher levels of education than those employed in non-professional sectors.

Multiple status outcomes and economic advantages are associated with varying levels of educational attainment including lower unemployment rates, enhanced prestige, and greater career options and opportunities (Day & Newburger, 2002). Higher occupation status is accompanied by an improved quality of life and greater access to resources, both economically and socially (Walpole, 2003). For example, Perna (2005) found that higher education is positively associated with a variety of economic and non-economic benefits. Economically, individuals who attain a bachelor's degree benefit in terms of higher average income, greater likelihood of health insurance coverage, decreased probability of receiving public assistance, and they tend to perceive a stronger

connection between education and their experienced employment-related benefits. In terms of income, the average individual with a two-year college degree earned $7,800 more per year than the average high school graduate in 2002; and the average bachelor's degree holder earned $21,800 more per year. This disparate trend continues with each year of education completed and with each level of degree conferred (Day & Newburger, 2002). The non-economic benefits of attaining a bachelor's degree include enhanced job satisfaction, decreased probability of smoking cigarettes, more frequent engagement in cultural activities and art events, and greater civic involvement (e.g., voting and volunteerism; Walpole, 2003).

Mediating Effects of Educational Attainment on Social Mobility

Educational attainment, or the lack thereof, is believed to affect social mobility through the mediation of the effects one's background resources on occupational status and income (Pascarella & Terenzini, 1991, 2005). For example, two individuals who come from low and high family socioeconomic status, but share similar levels educational attainment, can experience analogous levels of status attainment (Pascarella & Terenzini, 1991, 2005). However, educational attainment is also believed to exert mediating effects through the extension of one's previously held advantages due to his or her family of origin, individual ability, and prior achievements (Pascarella & Terenzini, 1991, 2005). In this regard, affluent children are more likely than children of low social class to enroll in college and receive a degree (McDonough, 1997; Tinto, 1993; Walpole, 2003); thus they are more likely to attain high income and high status occupations. This is due to the fact that in affluent families there are greater economic resources and the baccalaureate degree is viewed as the norm. For the affluent, success is defined by the completion of a college degree at a high prestige institution. For low social class families, the attainment of a secure job following high school graduation is considered the norm (Walpole, 2003). When it does occur, college enrollment is most probable at a two-year

institution due to lower tuition costs (McDonough, 1997; Walpole, 2003). Further, if low social class students enroll at four-year degree granting institutions, it most often occurs at institutions of low prestige and of low selectivity (Davis & Guppy, 1997; Hearn, 1991; Karabel & Astin, 1975; Lillard & Gerner, 1999).

Summary of the Effects of Educational Attainment on Social Mobility

The centrality of educational attainment in the process of social mobility is evident. It serves both a direct and mediating role in the process of social mobility. The extent to which one may enter high status occupations and high paying occupations is contingent upon the level of education to which he/she has been conferred (Smart, 1986). There is evidence to suggest that for each year of education attained and for each degree conferred, an individual will experience greater economic returns, greater access to and control over resources, more prestige, and an improved quality of life (Day & Newburger, 2002; Perna, 2005; Walpole, 2003). Finally, educational attainment mediates the effects of background characteristics on social mobility (e.g., education extends previously held advantages). Thus, the affluent are more likely to attend college at elite institutions and receive greater economic and status benefits. For the poor, should they attend college, they will most probably enter a community college or a four-year institution of low prestige, low selectivity, and low tuition costs (Davis & Guppy, 1997; Hearn, 1991; Karabel & Astin, 1975; Lillard & Gerner, 1999); all of which have been suggested to further perpetuate disadvantages in terms of social mobility-related outcomes. The section that follows explores how institutional control and institutional selectivity affect outcomes associated with social mobility.

Between-Effects of Institutions on Educational Attainment and Social Mobility

There is significant support in the literature pertaining to the differential effects of varying institutions on the educational attainment and social mobility of college students.

The purpose of this section is to examine how different types of academic institutions impact the students who attend them in terms of students' educational attainment and other measures of social mobility (i.e., variability in occupational status and income).

It is estimated that 30 – 40% of all community college students aspire to a baccalaureate degree (Dougherty, 1987, 1992; Horn et al., 2006). Given the fact that one of the main roles of community colleges is to prepare students to transfer to a four-year institution (AACC, 2008), as evidenced by the significant number of students who enroll in community colleges for this reason (Horn et al., 2006), it is important to understand the differences that exist among four-year institutions in terms of their effects on students' social mobility, as evidenced by variations in educational attainment, income level, and occupational status.

Institutional Control: Public versus Private Institutions

Educational Attainment

In their review of the literature, Pascarella and Terenzini (2005) identified a significant number of studies that indicated a substantial advantage for private institutions over public institutions in terms of bachelor's degree attainment rates and educational attainment (i.e., first-to-second year persistence) of college students at both the institutional level (ACT, 2002; Consortium for Student Retention Data Exchange, 2002; Five-Year Institutional Graduation Rates, 1997; Institutional Graduation Rates by Academic Selectivity, 1999; Institutional Graduation Rates by Degree Level, 1996) and the individual level (Astin, Tsui, & Avalos, 1996; Berkner, He, & Cataldi, 2002; Cuccaro-Alamin, 1997; Dey, 1990; Dey & Astin, 1989; Horn, 1998; McCormick & Horn, 1996; Porter, 1990). An additional finding at the individual level indicates that students who attend private institutions are more likely to persist into graduate school. However, when the effects of institutional size and students' pre-college characteristics (e.g., the average academic ability of students, enrollment status, and percentage of

minority students) are considered, the discrepancies in persistence and graduation rates between private and public institutions become negligible (Astin, 1993; Horn, 1998).

Thus, Pascarella and Terenzini (2005) conclude that institutional control is not strongly correlated with students' educational attainment after controlling for students' pre-college characteristics, institutional size, and their experienced social and academic integration. Institutional size is believed to indirectly exert its effects through differences in students' academic and social integration (Pascarella & Terenzini, 2005), both of which are related to persistence behavior (Tinto, 1993). For example, smaller institutions are believed to enhance academic integration through smaller class size and more frequent formal and informal interaction with faculty (Pascarella & Terenzini, 2005). For community college transfer students, these results indicate that their educational attainment is neither hindered nor advanced by transferring to and attending a publicly- or privately-controlled institution.

Income Level

Despite similarities in educational and degree attainment, there are indications that attendance at a private institution is related to variations in distal outcomes of social mobility. In their review, Pascarella and Terenzini (2005) conclude that there is a positive, albeit minimal (3%), financial advantage experienced by graduates of private institutions above and beyond that which is accounted for by individual student characteristics and institutional selectivity. Their review encompassed a broad array of studies examining multiple national samples including (a) The National Longitudinal Study of the High School Class of 1972 (NLS72), 1986 follow up (Arcidiacono, 1998; James & Alsalam, 1993; James, Alsalam, Conaty, & To, 1989; Knox et al., 1993; Sweetman, 1994a, 1994b); (b) The National Center for Educational Statistics Surveys of Recent College Graduates: 1985-1986 graduates followed up in 1987 (Rumberger & Thomas, 1993), 1989-1990 graduates followed up in 1991 (Tsapogas, Cahalan, & Stowe, 1994); (c) The National Science Foundation New Entrants Survey of 1992 graduates

followed up in 1993 (Tsapogas et al., 1994); (d) The Baccalaureate and Beyond Study of 1992-1993 graduates followed up one year later (Thomas, 1998); (e) The National Longitudinal Survey of Youth, 1987-1989, and 1993 follow-ups (Daniel, Black, & Smith, 1996a, 1996b; Monks, 2000); (f) The High School and Beyond 1980 cohort followed up in 1986 (Fox, 1993); (g) The Cooperative Institutional Research Program data, 1985 freshmen followed up in 1994 (Avalos, 1996); and (h) a survey of identical and non-identical female twins born in Minnesota and followed up in 1993 at the age of 45 or 46 (Behrman, Rosenzweig, & Taubman, 1996). Although the disparity is small, this estimated minimal positive return (i.e., 3%) is indicative of an inconsistency between the social mobility attainments of graduates of public versus private institutions. In general, it appears that community college students who transfer into a privately-controlled four-year institution can expect a greater probability of earning a minimal positive return on their investment above what they would have received at a similar publicly-controlled institution.

When deviations in institutional selectivity are considered, the minimal differences noted between types of control appear to become more pronounced. The disparity in earnings is most significant between those who graduate from elite private institutions and those who graduate from public institutions (Brewer et al., 1999). Using data from the NLS72 (1979 and 1986 follow-ups) and the 1982 High School and Beyond (1986 and 1992 follow-ups) data sets, both of which employ a longitudinal cross-cohort design, Brewer et al. (1999) examined differences in the hourly wages and annual earnings among graduates of the 1972 (n=3,062) and 1982 (n=2,165) high school classes who attended four-year institutions of varying selectivity and control. Based on institutional admissions policies (i.e., entering students' average high school class rank, high school grade point average, ACT/SAT scores, and the percentage of students admitted), they placed colleges and universities into one of three groups. The first group consisted of "elite" institutions defined as those colleges and universities with the most

competitive and highly competitive admissions policies. In other words, elite institutions tend to enroll a smaller number of students, who tend to perform significantly better in high school and on standardized admissions tests, than the students who are typically admitted at institutions categorized as *middle* and *bottom* colleges and universities. Institutions classified as “middle” are defined as those with competitive or very competitive admissions policies, and “bottom” institutions included colleges and universities with less competitive and open admissions policies. Institutions in each grouping were then further divided by public or private institution control, resulting in six college-type groups (i.e., public elite, private elite, public middle, private middle, public bottom, and private bottom).

After controlling for the effects of academic ability and demographic variables, Brewer and colleagues (1999) found that individuals who attended an elite private institution were more likely to experience significant long-term financial returns on their investment when compared to bottom-rated public institutions across both cohorts (i.e., a benefit of 19% was noted among the 1972 cohort and a 39% advantage for the 1982 cohort). To a lesser extent, economic gains were found for those who attended elite public institutions (25% and 26% gains, respectively across the 1972 and 1982 cohorts). A moderate economic return was granted to individuals who attended middle-rated private institutions relative to bottom-rated public universities (gains of 14% for the 1972 and 10% for the 1982 cohorts). Among middle-rated public institutions, the gains were only 5% and 6% for the 1972 and 1982 cohorts, respectively. These findings tend to indicate a conditional relationship between institutional selectivity and the earnings of graduates from publicly- and privately-controlled institutions. The trend suggests that as institutional selectivity rises, the discrepancy in expected earnings between graduates of public versus private institutions grows. For community college transfers, the findings suggest that they may have a higher probability of experiencing significant financial gains by choosing to attend a privately-controlled four-year institution over a publicly-

controlled four-year institution of equal selectivity. It is important to note that Brewer, Eide, and Ehrenberg (1999) failed to consider possible variations in occupational status among this sample, which could explain the differences noted in earnings.

Occupational Status

Knox, Lindsay, and Kolb (1993), used the same 1972 cohort as Brewer and his colleagues (1999) and found little evidence to support a difference in the occupational status among graduates of institutions of varying control. Knox and colleagues established that after controlling for students' background characteristics (i.e. race, ability, academic performance, college major, and educational attainment) and institutional size and selectivity, institutional control was related to a small and non-significant positive effect on the occupational status of the participants in the 1986 follow-up of the NLS72 cohort. The positive effect on occupational status tended to favor graduates of private institutions.

Summary of the Effects of Institutional Control

It appears that the positive effects of attending a privately- versus publicly-controlled institution on social mobility are primarily economic in terms of hourly wages and annual earnings (Brewer et al., 1999). Based on the evidence presented, it appears that college graduates tend to hold occupations of similar status (Knox et al., 1993) and attain similar levels of education (Pascarella & Terenzini, 2005), regardless of institutional control. Economically, students who graduate from private institutions are more likely to be awarded with a slight financial advantage (3%) over those who graduate from public institutions (Pascarella & Terenzini, 2005). However, the economic advantages bestowed upon graduates of private institutions appear to be moderated by institutional selectivity (Brewer et al., 1999). Thus, these findings suggest that individuals who graduate from public institutions tend to attain jobs of similar occupational status as those who graduate from private institutions. However, among institutions of similar selectivity, graduates of publicly-controlled institutions are less likely to experience

equivalent economic rewards as their private-school counterparts. In other words, the attainment of a baccalaureate degree appears to be related to greater social mobility via enhanced economic benefits if that degree is conferred by a privately-controlled institution versus a publicly-controlled institution of equal selectivity. The disparity in earnings appears to grow greater as institutional selectivity rises.

Institutional Selectivity

The evidence overwhelmingly indicates that there is a significant positive relationship between an institution's level of selectivity and a student's educational attainment, income level, and occupational status (Brewer et al., 1999; Ehrenberg, 2004; Ethington & Smart, 1986; Hilmer, 2000; Karabel & Astin, 1975; Pascarella & Terenzini, 1991, 2005; Rumberger & Thomas, 1993; Smart, 1986; Smart & Pascarella, 1986; Thomas, 2003). As noted earlier, institutional selectivity is defined by an institution's admissions policy. Thus, the more demanding an institution's admissions policy is in terms of its admitted students' demonstrated academic ability, the higher its associated level of selectivity (Pascarella & Terenzini, 2005).

Tsui (2003) opines that the benefits of attending highly selective institutions are derived from a combination of four factors including (a) students' precollege background characteristics, (b) enhanced educational resources and training at elite academic institutions, (c) the prestigious reputation associated with these institutions, and (d) an expectation among employers for the type of students that these institutions are believed to produce (e.g., the evidence suggests that higher selectivity signals that students possess greater intellectual ability and related traits important to job performance; Pascarella & Terenzini, 2005). It is important to note that separating the effects of these variables from institutional selectivity is difficult and the literature has failed to produce conclusive results in this regard (Pascarella & Terenzini, 2005).

Increments in institutional selectivity are positively correlated with the enrollment of students who possess higher levels of academic ability, academic preparation,

education- and career-related goals, and socioeconomic resources (Dolan & Schmidt, 1994; Pascarella & Terenzini, 1991, 2005; Tsui, 2003). Students who exemplify higher levels of these characteristics are more likely to persist to degree attainment and to attain entrance into graduate schools and high status occupations. For example, Pascarella and Terenzini (2005) concluded that graduates of highly selective institutions are more likely to enter professional occupations such as medicine or law. These findings are further confounded by the correlation between institutions of higher selectivity and the availability of institutional resources and support (e.g., higher quality faculty, higher faculty expectations, positive academic environment, increased commitment to the institution due to institutional prestige, and an emphasis on educational and career aspirations; Pascarella & Terenzini, 2005), all of which are positively related to higher educational attainment. Finally, Tsui (2003) states that discrepancies in educational and occupational attainment can be further explained by variations in the cognitive skill development of students who attend more or less selective institutions. Tsui concludes that institutions of higher selectivity produce significantly greater gains in students' critical thinking skills, which tend to be valued by institutions of higher education and in high status occupations. Consequently, many of the conclusions drawn below may be confounded by the effects of the factors suggested by Tsui (2003).

Educational Attainment

The consensus of the literature is that institutional selectivity is positively associated with educational attainment. Karabel and Astin (1975) concluded that attending an institution of higher selectivity is positively correlated with undergraduate graduation rates, graduate school acceptance and attendance, completion of a graduate or professional degree, and attendance at high-prestige graduate schools. This relationship is repeatedly confirmed through reviews of this literature (e.g., Ehrenberg, 2004; Pascarella & Terenzini, 1991, 2005).

Pascarella and Terenzini (2005) determined that institutional selectivity is positively and modestly associated with students' baccalaureate degree attainment. Their review encompasses a broad range of the literature examining institutional graduation rates (e.g., Five-Year Institutional Graduation Rates, 1997; Institutional Graduation Rates by Academic Selectivity, 1999; Institutional Graduation Rates by Degree Level, 1996) and educational attainments at the individual level of analysis (e.g., Adelman, 1999; Astin et al., 1996; Dey & Astin, 1989; Dolan & Schmidt, 1994; Ethington, 1997; Mullen, Goyette, & Soares, 2003; Stoecker & Pascarella, 1991) among institutions of varying selectivity. At the institutional level, the results of these studies consistently indicate that the most selective institutions are associated with the highest graduation rates, regardless of the type of institutional control. The latter studies included in their review examine the effects of institutional selectivity on students' educational attainments after controlling for a variety of individual academic and social background characteristics (i.e., academic ability, financial resources, and academic preparation). Pascarella and Terenzini (2005) determined that, net of these background characteristics, institutional selectivity continues to have a small positive relationship with students' baccalaureate graduation rates.

In regard to educational attainment beyond the baccalaureate degree, Eide and colleagues (1998) found that students who attend the most selective private institutions are rewarded with a higher probability of attending and graduating from the best graduate and professional schools. However, this benefit was only extended to graduates of elite private institutions and did not apply to graduates of elite public institutions. Eide and colleagues failed to account for institutional differences other than selectivity in drawing this conclusion. Similar findings have been found by others in the field after controlling for a greater number of confounds (Kingston & Smart, 1990). Interestingly, the educational attainment rewards noted in both of these studies parallel the economic gains experienced by graduates of elite private versus elite public institutions (cf., Brewer et al.,

1999). As Tsui (2003) indicated, these results may be partially explained by other variables associated with academic institutions of varying selectivity and control. In this regard, graduate student applicants from elite private undergraduate institutions may be rewarded by other factors, such as institutional prestige or reputation. Similar to employers, faculty members who make graduate/professional school admissions decisions, for example, may confer varying attributions to students' intellectual abilities and academic-related traits based on the reputation of the students' undergraduate institution.

The literature offers no clear explanation for the greater probability of higher educational attainments experienced by students who attend institutions of increasing selectivity. Despite the lack of a causal explanation, the fact remains that institutional selectivity is significantly and positively related to academic persistence, educational aspirations, and degree completion even after adjusting for pre-college characteristics (Pascarella & Terenzini, 2005). In particular, graduates of elite private institutions appear to incur the greatest degree of benefit. The implications for community college transfer students is clear, they gain improved odds of greater educational attainments with each increase in the selectivity level of the institution to which they transfer.

Income Level

Early research suggests that college and university selectivity is correlated with variations in earnings (Karabel & Astin, 1975). This finding is replicated throughout the educational and economical literature. In his synthesis of the economic literature, Ehrenberg (2004) concluded that individuals who attend the most selective institutions of higher education are more likely to be rewarded economically above and beyond those who attain similar educational levels and hold similar occupations, but who attend institutions with more liberal admissions policies. Multiple researchers have replicated these findings and discovered a positive linear relationship between institutional

selectivity and future earning trends (Behrman et al., 1996; Brewer et al., 1999; Hilmer, 2000).

Pascarella and Terenzini (2005) provide a synthesis of 27 studies, spanning 1989-2003, that examine the effects of institutional selectivity on individual earnings. Comparable to the previous analyses by Pascarella and Terenzini (2005) provided in this review, the various studies examining the effects of institutional selectivity on income level were conducted using similar data sets including: (a) NLS72, the 1979 and 1986 follow-ups (Arcidiacono, 1998; Brewer et al., 1999; Dale & Krueger, 1999; Hoxby & Long, 1999; James & Alsalam, 1993; James et al., 1989; Knox et al., 1993; Loury, 1997; Sweetman, 1994a, 1994b); (b) the High School and Beyond 1980 and 1982 cohorts, followed up in 1986 and 1991, respectively (Brewer & Ehrenberg, 1996; Brewer et al., 1999; Fitzgerald, 2000; Fox, 1993; Hilmer, 2000; Kane, 1998; Loury, 1997); (c) the National Longitudinal Survey of Youth, 1987-1989, the 1993 and 1995 follow-ups (Daniel et al., 1996a, 1996b; Hoxby & Long, 1999; Monks, 2000); (d) the College and Beyond 1976 cohort, the 1995 follow-up (Bowen & Bok, 1998; Dale & Krueger, 1999); (e) the Baccalaureate and Beyond Study of 1992-1993, the one-year follow-up (Thomas, 1998, 2000) and the four-year follow-up (Thomas, 2003); (f) the National Center for Education Statistics Surveys of Recent College Graduates: 1985-1986, the 1987 follow-up (Rumberger & Thomas, 1993), and 1989-1990 graduates, the 1991 follow-up (Tsapogas et al., 1994); (g) the National Science Foundation New Entrants Survey of 1992 Graduates, the 1993 follow-up (Tsapogas et al., 1994); (h) the Occupational Changes in a Generation, 1972 data (Hoxby & Long, 1999); (i) the Cooperative Institutional Research Program data: the 1972 freshmen followed up in 1980 (Kingston & Smart, 1990), and the 1985 freshman followed up in 1994 (Avalos, 1996); (j) the Panel Study of Income Dynamics from 1975 to 1992 (Turner, 1999); and (k) a survey of identical and non identical twins born in Minnesota and followed up in 1993 (Behrman et al., 1996).

Pascarella and Terenzini (2005) suggest that, after controlling for other institutional characteristics (i.e., control and size) and individual background characteristics (e.g., ability, family social class, and major); institutional selectivity appears to have a statistically significant and positive relationship with future earnings. They conservatively estimate that there is a net increase in earnings, as much as four percent higher, for every 100-point increase in the SAT score (or related ACT score) associated with an institution's level of selectivity. Pascarella and Terenzini suggest that this relationship may not be linear. They conclude that it tends to be only those schools at the top of the selectivity distribution that are associated with appreciable earnings. However, they caution that part of the difference in earnings may be attributable to other covariates that have gone unaccounted (e.g., motivation, occupational status). Among the studies in this area, important confounding variables are often left uncontrolled and therefore, the conclusions drawn may be inflated. For example, institutions of higher selectivity tend to attract highly motivated students of higher academic ability, who are more likely to have higher degree and career aspirations (Tsui, 2003). Differences left unaccounted for in students' motivation levels at elite colleges and universities may explain some of the variation in earnings. Of the studies reviewed by Pascarella and Terenzini (2005), no single study accounts for every related variable in determining the effects of institutional selectivity on earnings. Therefore, conclusions drawn from this research must be tentative. However, the overall trend across studies suggests a positive relationship between institutional selectivity and earnings.

Occupational Status

Pascarella and Terenzini (2005) determined that institutional selectivity has a "trivial and statistically non-significant" direct relationship with the occupational status attained by college graduates. Pascarella and Terenzini base their findings on the results of three major studies, (a) the NLS72, 1986 follow-up (Knox et al., 1993); (b) the 1985 Cooperative Institutional Research Program survey, 1994 follow-up (Avalos, 1996); and

(c) data from the 1957 high school seniors from the Wisconsin Longitudinal Study, 1974-75 and 1992-93 follow-ups (Dey, Wimsatt, Rhee, & Waterson, 1998). In each of the three studies similar controls were introduced for academic ability, race, gender, family socioeconomic background, college academic performance, academic major, and educational attainment. Across all three studies, when these controls were implemented, institutional selectivity failed to be significantly associated with students' occupational status.

However, based on the findings of two studies (i.e., Lentz & Leband, 1989; Kingston & Smart, 1990), Pascarella and Terenzini (2005) believe that institutional selectivity may be indirectly related to occupational status through its positive direct relationship with educational attainment, as noted previously (Eide et al., 1998). In the first study, institutional selectivity continued to have a statistically significant and positive relationship with admission into medical school, above and beyond that which was accounted for by academic ability, Medical College Admission Test scores, academic preparation, and background characteristics (Lentz & Leband, 1989). In the second study, similar controls were employed using the 1980 follow-up to the 1971 Cooperative Institutional Research Program freshman survey. Kingston and Smart (1990) found that students from the most selective private colleges in the U.S. were significantly more likely to complete a high-status professional degree. This relationship existed above and beyond that which was accounted for by race, sex, family background, high school achievement, and precollege occupational aspirations. In both of the studies reviewed here, the positive effects of institutional selectivity tended to be correlated with only students at the most selective institutions.

Interestingly, this finding is identical to that of Eide, Brewer, and Ehrenberg (1998) concerning the effects of institutional selectivity on educational attainment. Additionally, this finding is consistent with earlier work by Smart, (1986) who found that among those employed in professional careers, occupational status attainment was most

strongly related to the selectivity of the undergraduate institution an individual attended. For community college students, the implications of attending increasingly selective institutions appears to be indirectly correlated with occupational status through the enhancement of educational attainment associated with increasingly selective institutions.

Summary of the Effects of Institutional Selectivity

The findings suggest that increased institutional selectivity is positively and directly related to students' baccalaureate degree attainment (Pascarella & Terenzini, 2005). Institutional selectivity appears to have an indirect positive relationship with occupational status through its direct association with educational attainment. Specifically, the findings suggest that attending institutions of higher selectivity, particularly elite private institutions, results in a greater probability of gaining admission into the top graduate and professional schools, thus increasing the probability of attaining a high status occupation (Eide et al., 1998; Kingston & Smart, 1990; Lentz & Laband, 1989). In regard to earnings, institutional selectivity appears to have a modest direct relationship to income levels, which may be confounded by uncontrolled variables. Additionally, an integration of the literature (Brewer et al., 1999; Eide et al., 1998; Kingston & Smart, 1990; Lentz & Laband, 1989; Pascarella & Terenzini, 2005) suggests that earnings discrepancies may be further explained by the direct relationship between institutional selectivity and educational attainment and the indirect association with occupational status through educational attainment. Given the lack of control over confounding variables noted by Pascarella and Terenzini (2005) in regard to the effects of selectivity on income level, it is reasonable to assume that a significant portion of the variance may be due to differences in the educational attainments among graduates of divergent institutional selectivity. In regard to community college students, these finding suggest that students who transfer to institutions of higher selectivity can expect a direct and positive effect on educational attainment, thus resulting in a higher probability of

entering higher status and higher income occupations than that which they would have experienced had they attended an institution of lower selectivity.

Summary of Between-Effects of Institutions

The previous section provides evidence that suggests that students do not benefit equally from attending and graduating from various four-year degree granting institutions in terms of social mobility outcomes. The literature indicates that students who enroll in highly selective and privately-controlled institutions are more likely to be differentially and positively rewarded in terms of educational attainments, occupational status, and income level. Although the relationships are not always direct and linear, there are indications that they tend to persist. The discrepancies noted in this section are important for students facing college enrollment decisions. This is especially true for those who might choose to enter the community college first, with the intention of transferring to four-year institutions. At this point in the review, little information has been provided in regard to the social mobility experiences of community college students in terms of their educational attainments and whether social mobility outcomes vary dependent upon whether students choose to initiate their education at a two-year or a four-year academic institution. The section that follows examines the relationship between two-year institutions and college students' educational attainment and social mobility.

The American Community College

Community colleges were originally intended to democratize educational attainment opportunities. That is, they were intended to "bring postsecondary education and social mobility within the reach of people who would otherwise be left out, particularly individuals from low-income and racial-ethnic minority groups" (Pascarella & Terenzini, 2005, p. 375). As such, one of the roles community colleges were charged with included promoting students' educational attainment and academically preparing underprivileged students for transfer to a baccalaureate degree-granting institution (Cohen & Brawer, 1989). Numerous researchers have confirmed that for students of first-

generation status, low family income, and/or racial or ethnic minority status; community colleges provided them with the most likely point at which to enter the higher education system (Cabrera et al., 2005; Cohen & Brawer, 1989, 1996; Dougherty, 1987, 1992; Lea et al., 1979; McCool, 1984; McDonough, 1997; Pascarella & Terenzini, 1991, 2005).

There are a multitude of factors that contribute to the increased propensity for underprivileged students to initially enroll in a community college. First, American community colleges have open door admissions policies. Therefore, anyone who is able and willing to pay tuition costs can attend these institutions, regardless of their measured academic ability (AACC, 2008). Second, minority students and individuals from low family social class tend to be sensitive to high tuition costs (Heller, 1997). Thus, community colleges may provide an attractive alternative to underprivileged students due to their lower tuition costs (The College Board, 2004). Third, these students are likely to perceive financial advantages associated with initially attending school in their local community, thus avoiding the relocation and housing costs coupled with attending a four-year residential campus. Finally, the remedial preparation featured at community colleges may provide for a “second chance” among students of low measured academic ability to enter a four-year academic institution and realize higher levels of educational attainment (Cohen & Brawer, 1996; Grubb, 1991; Hilmer, 1997; Karabel & Astin, 1975; Pascarella & Terenzini, 2005). Although community colleges appear to make the possibility of a postsecondary education more readily available, debate continues as to whether these institutions fulfill their mission of promoting baccalaureate degree attainment and social mobility (cf., Brint & Karabel, 1989; Cohen & Brawer, 1989, 1996; Dougherty, 1987, 1991, 1992, 1994).

Given the appeal of community colleges and because many underprivileged students begin their postsecondary education at these institutions, it is important to understand whether community colleges aid or hinder the social mobility of students as evidenced by their attained levels of education, occupational status, and income. To begin

to answer this complex question, this portion of the review first considers whether initially enrolling at a two-year community college, rather than a four-year institution, affects students' educational attainments; and whether it affects the occupational status and income level of students who eventually earn a four-year degree. Next, provided that educational attainment is the primary route to social mobility and community colleges are the principal means by which to attain the baccalaureate degree for the disadvantaged, the review will examine how conflicting two-year versus four-year institutional factors may affect transfer students' educational attainments. The review will then turn to an examination of the differential effects of initial enrollment at two-year institutions (rather than four-year institutions) on the educational attainments of students from more advantaged versus disadvantaged backgrounds. Finally, several researchers indicate that psychosocial and study skill factors (e.g., motivation, commitment) as potential variables that affect educational outcomes (cf., Carnevale & Fry, 2000; Featherman & Carter, 1976; Jencks et al., 1976; Knox et al., 1993; Pascarella & Terenzini, 2005). Therefore, this review will conclude with a discussion of the literature pertaining to the effects of psychosocial and study skill factors on educational outcomes.

Effects of First Enrolling at a Community College versus a Four-year Institution on Social Mobility

It is important to consider the effects associated with beginning one's academic career at a two-year institution instead of a four-year institution, due to the high number of underprivileged individuals of low social class, minority status, and first-generation college attendance status who begin their postsecondary education at community colleges rather than four-year institutions (Cabrera et al., 2005; Cohen & Brawer, 1989; Dougherty, 1987, 1992; Horn et al., 2006; Lea et al., 1979; McCool, 1984; McDonough, 1997; Pascarella & Terenzini, 1991, 2005). Given that community colleges were intended to provide individuals with an alternative means by which to gain a baccalaureate degree, it is important to determine whether attaining a four-year degree after first enrolling in a

community college results in a similar likelihood of attaining social mobility related outcomes. If the probability of these outcomes is similar, than the legitimacy of the role of community colleges as a means by which to gain social mobility is supported. As noted previously, there are significant differences in the probability of social mobility-related outcomes between various four-year degree granting institutions. However, the effects of initial enrollment location on the probability of these outcomes have not been examined. To begin to determine the effects of community colleges on students' social mobility, evidence is provided below to assist in determining whether first enrolling at a community college, rather than a four-year institution, aids or hinders the social mobility of students as evidenced by differences or similarities in the likelihood of educational attainment, occupational status, and/or income level.

Educational Attainment

There are two ways in which to consider the effects of beginning one's college career at a community college, rather than a four-year institution, on educational attainment. Due to differences in methodology, there is little agreement between researchers regarding the educational attainments of students who initially enroll at a community college versus the attainments of matriculates to four-year colleges and universities. This inconsistency exists due to differences in comparison groups. In the first method of comparison, researchers are contrasting students who attended a four-year institution, but launched their college careers in either two-year or four-year institutions (i.e., they use a post-transfer community college sample). In the second method, researchers compare general community college entrants, whose degree aspirations include the bachelor's degree, with similar students who begin their postsecondary education at a four-year institution. Thus, they remove community college students who aspire to less than the baccalaureate degree from the sample (e.g., Christie, 1999; Lavin & Crook, 1990). Accordingly, they are comparing students who aspire to a four-year degree, but vary in where they choose to begin their postsecondary educations.

Researchers employing the first method are disadvantaged compared to researchers who use the second method because the participants included in the first method include only post-transfer community college students who have successfully made the transition into the upper divisions of the higher education system. Thus, the educational attainments of the first sample may be inflated compared to the pre-transfer community college sample included in the second method. Despite methodological issues, there is consensus in the literature that two-year matriculates who successfully transfer to a four-year institution take longer to earn a bachelor's degree than the traditional four-year college entrant (Cuccaro-Alamin, 1997; Lavin & Crook, 1990). This review will incorporate findings that utilize both methods of comparison.

In examining differences in the educational attainments of community college transfer students with those who initially enroll in four-year institutions, Pascarella and Terenzini (2005) reviewed several studies that employed national and/or large data bases including (a) data from the National Center for Educational Statistics (Berkner et al., 2002; Cuccaro-Alamin, 1997), (b) the High School and Beyond study (Adelman, 1998; Lee, Mackie-Lewis, & Marks, 1993), and (c) single institution or state system samples (Anglin, Davis, & Mooradian, 1995; DesJardins, Ahlburg, & McCall, 1999; Eimers & Mullen, 1997). In general, the findings from these studies indicate that community college students who successfully transfer into four-year institutions suffer little in terms educational attainment outcomes including baccalaureate degree attainment, graduate degree aspirations, and graduate school enrollment. Further, this lack of difference exists after accounting for the effects of demographic variables, family social class, campus residency, enrollment status, academic and social integration, field of study/college major, academic performance, and institutional characteristics. These findings generally indicate that community college students are as likely to make similar educational gains as their four-year counterparts once they successfully transfer into a baccalaureate degree granting institution.

However, since a greater proportion of community college entrants aspire to a four-year degree (i.e., 30-40%; Dougherty, 1987) than those who successfully transfer (12% - 20%; Cohen & Brawer, 1989; Grubb, 1991; NCES, 1996; Pincus & Archer, 1989), it is important to account for the students who aspire to attain a baccalaureate degree, but who do not transfer to a baccalaureate degree-granting institution (i.e., by including studies using the second method describe previously).

A different pattern emerges when studies include pre-transfer community college student samples. That is, when studies are not limited to comparisons between successful transfer students and their four-year counterparts. Pascarella and Terenzini (2005) reviewed several studies that consisted of national and/or large samples including (a) the NLS72 data (Whitaker & Pascarella, 1994), (b) the High School and Beyond data (Christie, 1999; Ganderton & Santos, 1995; Rouse, 1995), and (c) the City University of New York 1971 and 1972 cohorts (Lavin & Crook, 1990). The conclusions drawn from each of these studies consistently indicate that initial attendance at a community college is related to a significantly lower likelihood of community college students gaining similar educational attainments as their four-year counterparts.

Among community college students who aspire to at least a bachelor's degree, initially attending a community college is related to a decreased probability of attaining a bachelor's degree by as much as 9% to 22% (Christie, 1999; Ganderton & Santos, 1995; Lavin & Crook, 1990; Rouse, 1995; Whitaker & Pascarella, 1994). The percentage of students who attained a bachelor's degree varied across studies according to the follow-up interval. The findings tend to indicate that when the follow-up study was conducted over a shorter period of time, the percentage of students who failed to attain the bachelor's degree was greater. The results of Lavin and Crook (1990) and Whitaker and Pascarella (1994) deviated from this trend. Lavin and Crook (1990) sampled roughly 5,000 students over a 14-year period and found that initial enrollment at a community college was correlated with a decreased probability of attaining a four-year degree by

19% compared to those who began at a four-year institution. Similar findings over the same time period (14 years) were noted by Whitaker and Pascarella (1994), who found nearly a 17% decrease in the probability of equal educational attainment among community college versus four-year matriculates. In all of the studies reviewed, these effects persisted after controlling for students' background characteristics and other confounding variables. Lavin and Crook (1990) also found that initially enrolling at a community college was associated with a significant and negative effect on the odds of students earning a graduate degree, although they posited that this effect was indirect through the added length of time to degree attainment associated with initial community college matriculation.

More recently, research by Cabrera, Burkum, and La Nasa (2005) provides additional support for the conclusion that educational attainment varies depending upon where a student initiates his or her education. Cabrera and his colleagues used the 11-year follow-up data from the National Longitudinal High School and Beyond 1980 Sophomore Cohort, to determine whether where a student initially enrolled in postsecondary education was related to variations in the likelihood of bachelor's degree attainment. They found that initial enrollment at a community college was correlated with a negative and disparate probability of completing a four-year degree across all levels of prior academic preparation. Specifically, among low academically prepared students, those who initially entered a four-year institution, as opposed to a community college, were 7.8% more likely to earn a four-year degree (10.1% versus 2.3%, respectively). For students who obtained medium academic preparation and first enter a four-year institution rather than a two-year institution, they were 24.3% more likely to earn a four-year degree (35.1% versus 10.8%, respectively). Last, among the most academically prepared students, those who began their post-secondary education at a four-year institution were 47.4% more likely to earn a baccalaureate degree than those who first entered a community college (77.7% versus 30.3%, respectively).

Finally, Alfonso (2006) used a nationally representative sample (n = 8,887) obtained from the National Education Longitudinal Study (NELS), the U.S. Department of Education's Office of Institutional Research and Improvement, and the U.S. Department of Labor's Bureau of Labor Statistics to determine how initially attending a community college, rather than a four-year institution, affects the probability of baccalaureate attainment. In addition to controlling for traditional predictors (e.g., race, gender, social class, parent education level, college major, prior academic achievement; as used in the previously mentioned studies), Alfonso advanced the aforementioned literature by introducing controls for students' (a) degree aspirations, (b) attendance pathways (i.e., full-time, part-time, interrupted, and delayed enrollment), and (c) students' self-selection to attend either a community college or a four-year institution. Alfonso determined that when controlling for traditional predictors, educational expectations, and attendance pathways; community college students were 29.3% less likely to earn a bachelor's degree than those who began their education at a four-year institution. When adding controls for self-selection, the diminished likelihood of attaining a bachelor's degree grew larger (-33.2%) for those who initiated their education at a community college. In terms of descriptive differences, Alfonso found that community college students, who aspired to a bachelor's degree or higher, were more likely to delay enrollment (14.5% vs. 4.5%), to enroll part-time (75.3% vs. 61.9%), to enroll in remedial education (51.4% vs. 22.4%), to experience interrupted enrollment patterns (41.9% vs. 27.9%), and to come from lower social class than those who matriculated to four-year institutions. All of these factors were related to a lower likelihood of community college students attaining a bachelor's degree (Alfonso, 2006).

In summary, the literature indicates that once two-year students successfully transfer into a four-year institution, they are equally likely to earn a bachelor's degree, although they tend to take longer to attain the degree (Pascarella & Terenzini, 2005). The results of studies using samples that include only community college students who have

successfully transferred to a four-year institution must be considered with caution due to the fact that the sample is a specifically defined and more advantaged sub-group of the larger bachelor's degree aspiring community college population. Therefore, the broader conclusions drawn by Alfonso (2006), Cabrera and colleagues (2005), and Pascarella and Terenzini (2005) seem more representative of what actually occurs in the community college due to the inclusion of four-year degree aspirants who enter a community college, but do not successfully transfer. Pascarella and Terenzini (2005) conclude that students who initiate their postsecondary education at a community college are nearly 15-20% less likely to persist and earn a four-year degree than similar students who initiate their academic pursuits at four-year institutions after controlling for students' educational aspirations and students' background characteristics. However, Pascarella and Terenzini's (2005) conclusions may underestimate the true disparity between these groups due to a lack of studies included in their review that controlled for not only traditional predictors, but also for educational aspirations, attendance pathways, and self-selection. Therefore, the disparity (i.e., -29 to -33%) noted in Alfonso's (2006) study may more accurately depict the difference in bachelor's degree attainment rates between community college and four-year institution matriculates. For students considering the community college as a route to educational attainment and social mobility, the implications of these findings are profound.

Income Level

Similar to post-transfer graduation rates, the literature indicates that students who initially enter higher education at two-year institutions do not suffer decrements in earnings over their lifetime (Pascarella & Terenzini, 2005). Using the NLS72 1986 follow-up data, Whitaker and Pascarella (1994) determined that the impact of starting a postsecondary education at the community college level was related to a small and statistically non-significant effect (effect size = 0.024) on earnings fourteen years after graduating from high school. These results were evident after controlling for the effects

of background demographic variables, family social class, degree aspirations, educational attainment, occupational status, and hours worked per week. Adelman (1992, 1994) examined the same data and obtained similar results regarding the effects of initial college enrollment behavior on both earnings and home ownership. In summary, the limited evidence examining this outcome suggests that where one chooses to begin his or her postsecondary education has little effect on the probability of earning various levels of income. It appears that students who complete the same number of years of postsecondary education and/or degree receive similar earnings for comparable work, whether they begin their education at a two-year or a four-year institution.

Occupational Status

In his review of the literature, Dougherty (1992) determined that initially enrolling at a community college was associated with a lower probability of entering high-status occupations. He concluded that this effect tends to persist when controlling for the educational attainments of students and other confounding variables. Pascarella and Terenzini (2005) reviewed two studies that examined the effects of initial enrollment at a two-year versus a four-year institution on students' occupational status and found similar results. Using data from the National Longitudinal Survey of Labor Market Experiences, Monk-Turner (1990) determined that initial enrollment at a community college was related to significantly lower occupational status, as measured by the SEI (cf., Stevens & Featherman, 1981). Monk-Turner (1990) found that community college matriculates attained occupations that were 2.83 points lower in status on the SEI than their four-year counterparts. This effect persisted after controlling for the effects of age, cognitive ability, family social class, work experience, educational attainment, demographic variables, and geographic region. In a similarly designed study, Whitaker and Pascarella (1994) found a smaller non-statistically significant disadvantage equal to 1.13 SEI points lower in occupational status for those who initially enrolled at a two-year institution (versus a four-year institution) using the NLS72 1986 follow-up data. Taken

together, Pascarella and Terenzini (2005) estimate that the there is a modest and detrimental effect on one's occupational status related to choosing to first attend a community college rather than a four-year institution. Pascarella and Terenzini estimate that this effect is equal to two points lower on the SEI, which they determined to be equivalent to an effect size of -0.10.

Interestingly, this effect occurs despite controls for educational attainment. The evidence indicates that initially attending a community college is associated with significantly lower occupational status. The reasons for this are unclear. However, one possibility concerns the negative attributions employers may make to students who first enter a community college. In this regard, community college matriculates may be negatively affected by institutional factors, such as stereotypes regarding the type of student that attends and is produced by a community college. Similar to the positive attributions granted to students who graduate from elite institutions (cf., Tsui, 2003), employers may attribute negative characteristics to community college students' intellectual abilities and academic-/work-related traits based on the fact that they first attended a two-year institution. For example, they may feel that the student was not able to initially handle the demands of a "real" college. Therefore, employers may conclude that the student may not be able to handle the greater work responsibilities associated with higher status occupations. Consequently, these attributions may result in low expectations for the type of students who are anticipated to be produced by community colleges, resulting in a greater likelihood of entering lower status occupations.

Summary of the Effects of Initial Enrollment Location on Social Mobility

The overall findings suggest that initial enrollment at a community college is associated with both direct and indirect negative effects on measures of social mobility. The literature indicates that students who begin their educational careers at a community college suffer as much as a 33.2% decrease in the likelihood that they will persist and

complete a bachelor's degree (Alfonso, 2006). This effect appears to occur above and beyond that which can be attributed to degree aspirations, attendance pathways, self-selection, academic ability, and other student background characteristics (Alfonso, 2006). Further, initial community college attendance appears to be indirectly and negatively related to educational attainment through increased time to bachelor's degree completion, which may lead to a diminished likelihood of entering graduate school. When controlling for educational attainment, students who initially attend two-year institutions have a higher probability of being employed in occupations of lower status than those who begin their academic careers at four-year degree granting institutions. However, these same students appear to be equally as likely to earn similar wages and salaries for similar occupations as those students who initially enroll at four-year institutions. The evidence suggests that, after controlling for background characteristics, students are not as likely to achieve similar levels of educational attainment if they first enroll at two-year institutions. Thus, students who begin their academic careers at two-year institutions have a higher probability of attaining lower levels of occupational status and earnings due to a diminished likelihood of persistence (i.e., transfer) into the academic upper divisions of four-year institutions (Pascarella & Terenzini, 2005). However, to this point, little has been provided in regard to the institutional effects of community colleges on students' educational attainment. For this reason, this review now turns to a review of distinct institutional factors at community colleges and between community colleges and four-year institutions.

Conflicting Institutional Factors Important to Educational Attainment

Several researchers have identified numerous factors unique to the community college which diverge from those of four-year institutions and may create detrimental effects on the educational attainment of transfer students. Dougherty (1992) specifies four institutional factors that he believes lead to diminished persistence (i.e., transfer) into the

upper divisions of higher education including (a) the process of leaving a community college and relocating to and integrating with a new four-year institution and community, (b) diminished support and encouragement for the transfer process at the community college level, (c) the emphasis on and diversion toward vocational rather than academic programs at the community college level, and (d) obstacles encountered at the four-year institution (i.e., reluctance to enroll transfers, lack of space, and significantly smaller financial aid available for transfer students).

Townsend and Wilson (2006) provide support for the first factor cited as problematic by Dougherty (1992). In a qualitative study of 19 students who transferred from community colleges to a single large research-oriented university, Townsend and Wilson found that a majority of students endorsed difficulty in socially and academically integrating into the new university community. Tinto (1993) cites the social and academic integration of students into an institution as essential to persistence. Participants in Townsend and Wilson's (2006) study reported difficulty due to the significant difference in size between the two institutions. Thus, transfer students indicated that the large class size and the research focus of the faculty hindered both social and academic integration, which is consistent with the conclusions drawn by Pascarella & Terenzini (2005). Concerning academic integration, many students perceived that the university faculty failed to care for pedagogy and student attendance. Further, they viewed the university faculty as more concerned about their research endeavors than classroom instruction (Townsend & Wilson, 2006).

The participants indicated that their social integration was diminished due to the large size of the classroom (Townsend & Wilson, 2006). Many of the transfer students used the academic classroom at the community college as a venue for both social and academic integration. They perceived the community college classroom as a place to meet other students and to form study groups. However, they endorsed frustration with the university lecture halls due to their perceived anonymity and the reluctance of native

university students to form study groups. For non-traditional aged students, social integration was detrimentally affected due to the disparity in age and their greater likelihood of having non-academic obligations (e.g., work). Traditional-aged transfer students cited entering a community with pre-established friendships as an additional hurdle to their social integration. The university in this study went to great lengths to facilitate the social integration of native university students during their first-year via residential learning communities and freshman interest groups. Little was provided for entering transfer students in this regard. As a result, the university's efforts may bolster the social integration of first-year students native to the institution, while detrimentally affecting the social integration of transfer students who later attempt to join these established communities.

In regard to Dougherty's (1992) second factor, diminished support and encouragement, Pascarella and Terenzini (2005) estimate that attending a two-year college reduces students' degree aspirations by as much as 40%. For example, Pascarella, Edison, Nora, Hagedorn, and Terenzini (1998) found that bachelor's-degree seeking community college matriculates were 20-31% more likely to lower their educational degree plans below a bachelor's degree than similar four-year matriculates by the end of their second year of college. Degree aspirations have been found to be highly predictive of students' eventual educational attainments (Pascarella & Terenzini, 1991). In this regard, support is provided for Karabel and Astin's (1975) "cooling out" hypothesis through diminished degree aspirations among community college attendees. Further evidence is provided by the fact that community college attendance appears to reduce the probability that high-ability minority students will persist in math, science, and engineering majors; which tend to be fields of study that are highly correlated with high status and high income occupations (Pascarella & Terenzini, 2005; Stevens & Featherman, 1981).

Additional support is found in the work of Pascarella, Wolniak, and Pierson (2003), who provide evidence which indicates that the average pre-college degree plans of the student body at a given two-year institution may either diminish or foster baccalaureate attainment. Pascarella and colleagues used 285 participants from five community colleges to examine whether institutional and college experience variables (e.g., grades, variety of academic courses, fraternity/sorority affiliation, perceptions of faculty instructional skill and organization, extra-curricular involvement, employment, and average student-body degree plans) influence end-of-first year degree plans (i.e., the highest degree they expect to earn and whether that degree is less than a bachelor's degree or a bachelor's degree or greater). Pascarella and colleagues (2003) found that the most significant predictor of end-of-first year degree plans was the average pre-college degree plans of the student body at the community college one attended. This factor significantly and positively affected both individual end-of-first year degree plans and individual end-of-first year plans to obtain at least a bachelors degree ($R^2 = .336$, $p < .01$), above and beyond that which was accounted for by individual academic and non-academic experiences. This finding parallels the effect of highly selective institutions on students' educational attainments. Specifically, institutions of higher selectivity are believed to possess a positive academic environment (higher faculty/student academic expectations, higher quality faculty, and a greater academic orientation), which is believed to lead to enhanced educational aspirations and attainments (Pascarella & Terenzini, 2005). Pascarella and colleagues' (2003) findings suggests that there may be individual variation among community colleges concerning the extent to which they help or hinder students' educational degree plans.

Finally, in regard to Dougherty's (1992) final two factors, little evidence is provided in the literature to support these factors. However, Alfonso's (2006) nationally representative study (n = 8,887) provides initial evidence which contradicts the assertion that community colleges emphasize vocational programs and divert students away from

academic programs. Alfonso's findings refute the vocalization of community college matriculates as an explanation for the disparity in bachelor's degree attainment rates. In her study of the effects of community college attendance on baccalaureate attainment, Alfonso introduced a control for students' declared major field of study during their first enrollment tenure. She proffers that if community colleges pull students from academic tracks toward vocational programs, the aforementioned control variable would illuminate the vocalization of community college students. Her findings fail to support the vocalization of community college students. That is, the negative effect associated with initial community college attendance on students' bachelor's degree attainment rates continues to be large and significant after controlling for changes in one's academic major (R^2 = -.293 to -.332, $p < 0.05$).

In sum, it is posited that institutional differences may combine to diminish the educational attainments of community college transfer students (Dougherty, 1987, 1992, 1994). The limited available research suggests that institutional factors unique to community colleges and four-year institutions may interact and detract from students' educational attainment. Support is provided in this regard by the difficulties endorsed by transfer students' in the process of relocating to and integrating (i.e., academically and socially) with their respective new four-year institution and its community (Townsend & Wilson, 2006). Further, evidence suggests that institutional factors may affect educational attainments in both positive and negative directions (Pascarella et al., 2003; Pascarella & Terenzini, 2005). As Dougherty (1992) suggested, the open door admission policy associated with two-year institutions may reduce the baccalaureate attainment rate due to lower faculty expectations for their students and lower expectations among the students themselves. However, the evidence provided here suggests that the idiosyncratic student body at a given community college, and its average degree aspirations, can either diminish or encourage student's degree aspirations and the transfer process. Finally, the findings of Alfonso (2006) refute the vocalization explanation for the baccalaureate

degree attainment gap between two-year and four-year matriculates. Therefore, as suggested by Alfonso (2006), other psychosocial factors unique to the students themselves may shed light on the degree attainment gap. Thus, this review now turns to an examination of the individual student characteristics that may affect educational attainment.

The Effects of Student Characteristics on Educational Attainment

The Effects of Race on Educational Attainment

Pascarella and Terenzini (2005) examined three studies that examine whether the effects of initial enrollment on the probability of bachelor's degree completion depend on students' race. Two of the studies used nationally representative samples that were tracked over a six-year period (Lee et al., 1993; Swanson, 2002) and the third study utilized students enrolled in the City University of New York (CUNY) system in the early 1970's who were followed-up 14 years later (Crook & Lavin, 1989). The results across all three studies indicated that the effects of initial enrollment on the likelihood of bachelor's degree attainment did not depend on students' race. Further, Lee et al. (1993) failed to find evidence to suggest that the effects of initial enrollment on the odds of graduate school attendance varied across race. Thus, based on the literature reviewed by Pascarella and Terenzini (2005) it appears that all students, regardless of race, experience similar odds of baccalaureate degree attainment regardless of where they choose to initiate their education.

However, there are several studies that were not considered by Pascarella and Terenzini (2005) for reasons that remain unclear. The evidence from these studies tends to be preliminary and inconclusive. Two studies make use of large nationally representative samples employing the High School and Beyond surveys to examine whether the effect of initial enrollment at a community college on the probability of students' educational attainment depends on students' race (Ganderton & Santos, 1995;

Lee & Frank, 1990). Both studies indicate that the likelihood of educational attainments (i.e., transfer to and/or graduation from four-year institutions) of students who initiate their education at the community college level depends on students' race/ethnic background.

In considering baccalaureate degree attainment as the outcome, Ganderton and Santos (1995) used data from the six-year follow-up of the 1980 senior class and confirmed a direct and negative effect associated with initial community college enrollment on the odds of bachelor's degree completion. However, Ganderton and Santos also found that initial enrollment at a community college was related to different effects on the probability of four-year degree attainment across race. Specifically, they found that White students' baccalaureate degree attainment rates were most disadvantaged by first attending a community college (-22.1%), followed by African American (-13.1%), and then Hispanic students (-10.3%).

Interestingly, the results of Bailey and Weininger's (2002) study also support the conclusion that the likelihood of baccalaureate degree attainment among community college matriculates depends on race. However, their results contradict those of Ganderton and Santos (1995). Bailey and Weininger (2002) examined the moderating effect of race among the 1990 and 1997 entering student-body data collected from the CUNY system, which consists of both community colleges and four-year institutions. It is important to note that a significant number of students in their sample were foreign-born nationals. Therefore, their findings may be specific to the CUNY population. However, after controlling for associate's degree receipt and transfer grade point average, Bailey and Weininger found that Black and Hispanic students who successfully transferred to a four-year institution were significantly less likely to earn a four-year degree (-14.6% and -26.7%, respectively) than White students who followed a similar educational path. In this regard, it appears race moderates the probability of baccalaureate

degree attainment once a student has successfully transferred. Who benefits and who suffers remains to be fully understood.

In regard to community college outcomes (i.e., associate's degree receipt, transfer, and persistence), Ganderton and Santos (1995) found that a greater proportion of Hispanic and White students (27% and 29%, respectively) transferred into a four-year institution than did the percentage of Black students (20%). Lee and Frank, (1990) used a nationally representative sample of community college transfers from the 1982 and 1984 follow-up data (n = 2,500) of the High School and Beyond 1980 cohort in their analysis. They determined that the percentage of Black and Hispanic students who successfully transferred to a four-year institution (6.1% and 7.2%, respectively) compared to the percentage enrolled in the community college population (9.1% and 10.3%, respectively) significantly differed. Lee and Frank suggest that the discrepancy between the percentage of racial minorities in the community college sample compared to the percentage that successfully transferred is indicative of moderation effect. That is, the effect of initial community college enrollment on the likelihood of transfer behavior is dependent on race. The findings of Lee and Frank (1990) partially confirm those indicated by Ganderton and Santos (1995). Specifically, that Black community college students are significantly less likely transfer into a four-year institution than White students.

The remaining studies that support race as a moderator of transfer come from single education system and single institution samples. Using a relatively small single institution sample (n = 74), Townsend, McNerney, and Arnold (1993) examined factors related to transfer from one community college into a four-year institution. They provide preliminary evidence that suggests that minority students are less likely to transfer from a community college to a four-year institution and less likely to complete the four-year degree than their White peers who follow a similar educational path.

Feldman (1993) found that racial/ethnic minorities at a single institution had significantly greater odds of dropping out of the community college than similar White

students. Feldman's sample had an adequate number of Black students, but a limited number of Hispanic, Asian, and Native American students. Therefore, the conclusions drawn regarding Hispanic, Asian, and Native American students are tentative. He found that Black students were 1.75 times more likely to dropout than White students. He determined that Asian, Hispanic, and Native American students were 1.136, 6.22, and 10 times more likely to dropout than White students, respectively. Although preliminary, his findings suggest that the effects of community college enrollment on the odds of persistence in postsecondary education may depend on students' race.

In regard to evidence that fails to support race as a moderator, the results of Bailey and Weininger's (2002) study support the conclusion that race does not moderate the odds of transfer or associate's degree attainment. Bailey and Weininger (2002) found that after controlling for demographic variables, family social class variables, academic ability, employment status, gender, age, and degree aspirations; there was no evidence to support the conclusion that minority students who initially enroll at the community college level are disadvantaged in terms of their odds of associate's degree receipt or transfer into a four-year institution.

Finally, there are three small single institution studies that indicate that the odds of community college students' educational attainments do not depend on race. Tharp (1998) and Windham (1995) used the odds of persistence in the community college setting as an outcome and failed to find a moderating effect for race. Clagett (1996) broadened the outcome variable to include the odds of persistence within the community college, graduation, and transfer as successful outcomes. He failed to find a moderating effect of race on any of the aforementioned outcomes. These findings are similar to the initial findings of Bailey and Weininger (2002).

In sum, there is little clarity in the literature concerning whether there exists a moderating effect of race on the odds of successful student educational outcomes. There is evidence that suggests that regardless of a student's point of entry into postsecondary

education; the odds of his or her educational attainment do not depend on his or her race (e.g., Clagett, 1996; Crook & Lavin, 1989; Lee et al., 1993; Swanson, 2002; Tharp, 1998; Windham, 1995). Conversely, there are indications that the odds of educational attainment does vary across race (e.g., Bailey & Weininger, 2002; Feldman, 1993; Lee & Frank, 1990; Townsend et al., 1993). With the exception of Ganderton and Santos (1995), a consensus in the literature reviewed here is that if educational attainment does indeed depend on race, then White students tend to be the beneficiaries of its effects. Further clarification is needed in the literature to determine if, and to what extent, race moderates educational outcomes.

The Effects of Generational Status on Educational Attainment

The evidence concerning the conditional effects of generational status on the odds of educational attainment is primarily drawn from the work of Pascarella and Terenzini (2005). They conclude that first-generation college students suffer disadvantages throughout their entire postsecondary education for factors unrelated to their race, family income, academic ability, or other associated factors (cf. Berkner & Chavez, 1997; Nunez & Cuccaro-Alamin, 1998). Pascarella and Terenzini (2005) determined, based upon three studies (i.e., Ingles, Curin, Kaugman, Alt, & Chen, 2002; Nunez & Cuccaro-Alamin, 1998; Parental Educational Attainment, 1999), that having at least one parent who has some college exposure is highly predictive of greater student educational attainments regardless of their point of entry into postsecondary education. They find that students whose parents have no college exposure are nine times less likely to gain some college experience and nearly half as likely to earn a bachelor’s degree as similar students who have at least one parent who attended some college (5% versus 44%, and 11% versus 21%, respectively; Pascarella & Terenzini, 2005). Nunez and Cuccaro-Alamin (1998) adjusted for full-time/part-time enrollment status, age, gender, race, type of institution attended, and academic and social integration; and found that student whose parents had

some college exposure had a 7% advantage five years after high school graduation (69% vs. 62%) in their probability of obtaining some postsecondary credential.

When compared to students who have at least one parent who holds a bachelor's degree or higher, Pascarella and Terenzini (2005) conclude that first-generation students are five times less likely to earn a bachelor's degree (11% versus 50%; Ingles et al., 2002; Parental Educational Attainment, 1999). Using data from the National Center for Educational Statistics, Berkner and colleagues (2002) found that first-generation college students are significantly less likely to earn a bachelor's degree (16% versus 41%) and nearly three times more likely to earn a vocational certificate (18% versus 7%) than similar students with at least one parent who holds a four-year degree. Similar discrepancies in the educational attainments of first-generation versus second- or multi-generation college students have been noted by other researchers. For example, Horn (1998) found that students with at least one college educated parent are half as likely as first-generation students to withdraw from college (10% versus 23%, respectively). This difference persists despite controls for college grades, delayed enrollment, work status, college involvement, financial aid, attendance status, race, gender, social class, and institutional control.

Three studies are included in this review, which Pascarella and Terenzini (2005) did not include in their review. Using a large single institution sample, Lanni (1997) found that when the educational attainments of parents were held constant, the difference in the educational attainments between White and Black students disappeared. He found that parents' education was the most salient predictor of student's success in this sample. Gerardi (1996) provides evidence that suggests that a father's education is positively related to graduation rates among college students. Specifically, he found that a student incurred a 15% increase in the likelihood of graduating if his/her father had completed at least some college. Finally, in examining the intergenerational mobility of male African Americans, Davis (1994) found that a father's education level was the most profound

predictor of his son's educational attainments. He determined that a son's educational attainments and a father's educational attainments were significantly related in a positive and linear fashion. Further, he found that this trend held for both White and Black participants in his study.

Finally, Pascarella and Terenzini (2005) provide evidence which indicates that first-generation college students who attain a four-year degree continue to be disadvantaged in terms of their likelihood of possessing graduate and professional school aspirations (Isaac, Malaney, & Karras, 1992) and enrollment (Nunez & Cuccaro-Alamin, 1998). After adjusting for the variability accounted for by gender, race, age, academic performance, student loan debt, and institutional control, first-generation college students are less likely to enroll in graduate school than students whose parents hold a bachelor's degree or higher (26% vs. 33%, respectively; Choy, 2000, 2001).

In sum, the clear consensus in the literature is that the effect of initial enrollment on the probability of educational attainment is not dependent on generational status. However, the literature consistently indicates that, regardless of their point of entry, first-generation college students are significantly less likely to persist, transfer, and graduate than students whose parents have either attained some college education or hold a bachelor's degree or higher (Nunez & Cuccaro-Alamin, 1998). Although students whose parents have some college education benefit more than first-generation college students, the disparity in educational attainment appears to grow even greater when at least one parent holds a baccalaureate degree (Pascarella & Terenzini, 2005). This relationship exists above and beyond that which is accounted for by background characteristics, prior academic achievement, and other related factors. Finally, the detrimental effects of being a first-generation college student appear to continue to negatively impact the likelihood of educational attainments beyond the receipt of the bachelor's degree (cf. Pascarella & Terenzini, 2005).

The Effects of Family Income on Educational Attainment

In their review of the literature, Pascarella and Terenzini (2005) concluded, based upon the work of Ethington (1997), that family income failed to produce a moderating effect on the probability of students' educational attainments. Ethington's (1997) study was restricted to entrants at four-year institutions. A more recent study conducted by Cabrera, Burkum, and La Nasa (2005) suggests that students belonging to the lowest family income quartile are underrepresented in higher education, while those in the highest income quartile are overrepresented. Further, students from the lowest family income quartile suffer in terms of their likelihood of educational attainment regardless of whether they begin their postsecondary education in a community college or a four-year institution.

Cabrera, Burkum, and La Nasa (2005) utilized data from a nationally representative sample drawn from the National High School and Beyond 1980 sophomore cohort and found a moderate correlation ($r = 0.335$) between family income and four-year degree attainment. Specifically, they found that students in the highest family income quartile are 44% more likely to aspire to a bachelor's degree and 24% more likely to attain a bachelor's degree (after controlling for academic preparation, race, gender, and other factors predictive of graduation) than students in the lowest family income quartile. This effect persists whether they begin in a community college or a four-year institution. Further, they found a significant and positive relationship between family income and the type of institutions in which students choose to initiate their postsecondary education, ($X^2 = 206{,}703.6$, $\rho = <0.001$, $r = 0.290$). Specifically, students belonging to the highest family income quartile were 37% more likely to initially attend a four-year school (66.9% versus 29.9%, respectively) and 18.6% less likely to initiate their education at a community college (29.2% versus 47.8%), regardless of their prior academic preparation and achievement.

When students are split into groups based upon their prior academic preparation (i.e., low, medium, and high; as defined by student's ability, high school graduation rank, and quality/intensity of high school curriculum, relative to other participants), students from the lowest family income quartile were generally less likely to secure a bachelor's degree than their similarly prepared and more affluent counterparts, regardless of their point of entry into the system of higher education. Among students who initially enrolled at a community college, students categorized as being of high academic preparation and low family income were 18.6% less likely to attain a degree than similar students from the highest family income quartile (18.2% versus 36.8%, respectively). Among two-year entrants of medium academic preparation, student of low family income were 11.6% less likely to earn a four-year degree (3.3% versus 14.9%, respectively). Finally, in considering community college matriculates of low academic preparation, students from low family income backgrounds were 2.1% less likely to attain a bachelor's degree than their more affluent and similarly prepared counterparts (0.7% versus 2.8%, respectively; Cabrera et al., 2005).

Among students who initially enrolled at a four-year institution, students of high academic preparation and low family income were 22.5% less likely to attain a bachelor's degree than similarly prepared affluent peers (58.5% versus 81%, respectively). Among students of medium academic preparation, students of low family income were 12.7% less likely to attain a four-year degree (26% versus 38.7%, respectively). Finally, a different trend emerged among students of low academic preparation. In this instance, students of low family income were 10.9% more likely to attain a baccalaureate degree than their more affluent peers (20.8% versus 9.9%, respectively; Cabrera et al., 2005). Cabrera, Burkum, and La Nasa (2005) indicate that this surprising finding may be due in part to differences in resiliency among low and high family income students in four-year institutions. This suggests that psychosocial factors, such as motivation and commitment to college, may play a part in facilitating the educational attainments of these students.

Cabrera, Burkum, and La Nasa (2005) found a significant association between transfer behavior and family income (X^2 = 13,380.09, ρ= <0.001, r = 0.164). Students in the lowest family income category were 19.7% less likely to transfer into a four-year institution than similar students in the highest family income quartile. The disparity in transfer rates increased linearly with each increase in family income quartile. Among students who initially enrolled in a community college, 17% of the lowest family income quartile transferred to a four-year institution, compared to 22.9% of the low-medium quartile, 33.9% of the medium-high quartile, and 36.7% of the highest family income quartile. After controlling for demographic variables, academic support, degree aspirations, college academic performance, remedial education, collegiate experiences, financial aid, and having children while attending college; students in the low family income quartile continued to experience a 7% disadvantage in terms of the probability of transfer into four-year institutions compared to students in the highest income quartile.

Based on the literature above, it appears that students of low family income are less likely to pursue a postsecondary education than their more financially privileged peers. However, when they choose to pursue a college degree, they will more than likely enter the system of higher education at the community college level. In addition, they are generally less likely to aspire to a four-year degree, less likely to transfer to a four-year institution, and less likely to attain a bachelor's degree than students of similar academic preparation and higher family income. To this point, little evidence has been provided in terms of the level of institutional selectivity into which these students choose to transfer. As Pascarella and Terenzini (2005) noted, and earlier evidence suggests, students who graduate from institutions of higher selectivity experience an increased probability of greater occupational status, educational attainment, and income levels. Therefore, it is important to determine the extent to which community college students are able to attend and transfer into institutions of varying selectivity.

The Moderating Effects of Student Characteristics on Type of Transfer Institution

Hilmer (1997) provides the only study that examines the effects of initial community college enrollment on students' ability to transfer into institutions of varying selectivity. A thorough search of the literature failed to identify similar studies examining the effects of initial community college attendance on the odds of students transferring into privately controlled institutions. Hilmer sought to determine whether the effects of initial community college attendance on the selectivity of a university to which a student chooses to transfer depends on students' characteristics. To conduct his analyses, Hilmer used a nationally representative sample (n = 13,350) drawn from the High School and Beyond 1980 senior and sophomore cohorts. Hilmer created two prediction equations to determine the level of selectivity of an institution a student chooses if he or she attends (a) a four-year institution directly from high school or (b) a community college before transferring to a four-year institution. Hilmer took into consideration a number of predictive factors including race, gender, high school activity engagement levels, high school grades, standardized test scores, family income, parent's education level, geographic location, and college costs. Hilmer's study is restricted to community college entrants who successfully transfer to a four-year institution. Therefore, it is important to note that the findings of his study fail to consider the significantly large number of students who aspire to a four-year degree, but for unaccounted for reasons, are unable to transfer (cf., Cohen & Brawer, 1989, 1996; Hoachlander et al., 2003; Horn et al., 2006; NCES, 1996; Pincus & Archer, 1989)

Hilmer (1997) found a positive main effect for entering postsecondary education at the community college on transfer into four-year institutions. Specifically, he found that overall, students are able to transfer into and attend universities roughly 32 SAT points higher in selectivity if they first attend a community college. Further, he found that the effects of initial community college entrance on transfer into institutions of varying

selectivity depended on students family income level, academic ability, and high school academic performance. Specifically, Hilmer determined that students of low family income, low academic ability, and poor high school academic performance benefit the most from initial community college enrollment. For students of low family income, they are able to transfer into institutions that are nearly 50 SAT points higher in selectivity than if they had attended a four-year institution directly out of high school. For students of low tested ability and low academic performance in high school, they are able to transfer into four-year institutions 75 and 57 SAT points higher in selectivity, respectively, than if they had attended a four-year institution directly out of high school.

In terms of race and generational status, Hilmer (1997) found that Black students are more likely to transfer to institutions of lower selectivity than their White counterparts. He failed to find a significant difference between White and Hispanic students in this regard. However, students who have at least one parent with a college education are at increased odds for directly attending a four-year institution of higher selectivity than those whose parents had no college education.

The results of Hilmer's (1997) study suggest that the effect of initial community college enrollment on the selectivity of a university to which a student chooses to transfer depends on an amalgam of students' characteristics. Overall, his finding suggest that disadvantaged community college students (i.e., low income and low academic ability) tended to benefit to a greater extent than their more advantaged community college counterparts in terms of transferring into an institution of higher institutional selectivity than they would have been able to attend directly out of high school. However, the findings also indicate that racial/ethnic minority and first-generation college students do not benefit in this regard from initial community college attendance. The results of this study are limited in terms of generalizability because the sample only included students who successfully transferred into a four-year institution. Therefore, a significant number of four-year degree aspirants who entered the community college but failed to transfer,

were not included in these analyses. More research is needed to determine whether these effects persist when using a sample more representative of the community college population. In addition, key psychosocial variables (i.e., motivation, commitment) were not included in Hilmer's work. The effect of these variables may provide further clarification concerning the educational attainment process.

The Effects of Psychosocial Factors on Educational Attainment

Throughout this review, several researchers have suggested the importance of individual characteristics and psychosocial factors (e.g., motivation, resiliency, commitment) on the educational attainment of college students (cf., Cabrera et al., 2005; Carnevale & Fry, 2000; Featherman & Carter, 1976; Jencks et al., 1976; Knox et al., 1993; Pascarella & Terenzini, 2005; Tinto, 1993). Dougherty (1992) cites multiple psychosocial causes of attrition among transfer students once they successfully navigate the transfer process. These causes include lower academic ability, less motivation, and difficulty with the academic and social integration process. In this, the final section of this review, evidence is provided to support the importance of psychosocial and study skill factors on the educational attainment process. This section begins with a broad discussion of the many psychological, economic, social, and environmental difficulties commonly faced by community college students. Next, the review will address psychosocial and study skill factors as they relate to academic performance and retention among community college samples. Finally, it will conclude with a discussion of the saliency of narrowly defined psychosocial and study skill factors as they relate to retention and academic performance.

Common Psychosocial Barriers to Educational Attainment

At the individual level, most community college students face an amalgam of common barriers including commuting, full-time employment, single parenthood and/or family obligations, and they tend come from families that are more economically

disadvantaged than their four-year counterparts (Cabrera et al., 2006; Horn et al., 2006; Lanni, 1997; Tinto, Russo, & Kadel, 1994). Further, they are more inclined to be financially independent and face personal problems, family problems, economic hardship, a lack of child care, and occupational demands while concurrently dealing with the rigor of academia (Horn et al., 2006). For example, Horn and colleagues (2006) found that working community college students are more inclined to define themselves as employees who attend school as opposed to their employed four-year counterparts, who tended to define themselves as students who work.

As noted previously, community colleges tend to enroll a significant proportion of disadvantaged groups including those of first-generation status, lower economic backgrounds, and minority status (Horn et al., 2006). Researchers have found that these disadvantaged students tend to lack social capital (Alford, 1998; Cohen & Brawer, 1996; Striplin, 1999; Tinto, 1993). That is, they tend to come from backgrounds where the pursuit of higher education is not highly valued and one which lacks information regarding how move ahead educationally and economically (Alford, 1998; Bubolz, 2001; Cohen & Brawer, 1996; Littrell, 1999; Striplin, 1999; Walpole, 2003). Specifically, they may have limited access to social contacts that can assist them in advancing by providing them with knowledge of how to navigate the educational system, particularly the transfer process (Cohen & Brawer, 1996; Striplin, 1999). For example, first-generation students tend to receive poor academic counseling and advising while enrolled in the community college setting (Striplin, 1999). Therefore, as Dougherty (1992) suggests, these students may be less motivated and committed to the attainment of educational goals.

Further, disadvantaged community college students have been found to have poor academic preparation, low academic self-efficacy, and they tend to believe that they are not capable of earning a college education (Hellman, 1996; Horn, et al., 2006; Mitchell, 1997; Striplin, 1999). To complicate matters, these students face new ideas, new lifestyles, and a new academic culture that may differ from their own; which often creates

discomfort in separating from their culture of origin (Littrell, 1999; Nelson, Englar-Carlson, Tierney, & Hau, 2006; Striplin, 1999). Closely related, the families of disadvantaged individuals may engage in “lateral classism” (cf. Liu et al., 2004) by discouraging or failing to support the efforts of these students to attain higher levels of education than have been previously achieved within the family (Nelson et al., 2006; Striplin, 1999). Liu and colleagues (2004) posit that “classism is about keeping individuals within a particular group or category” (e.g., their social class of origin; p. 8). Classism can lead to alienation from the student’s family of origin, which may heighten the disadvantaged student’s degree of discomfort and distress. This may lead to diminished educational aspirations, goals, persistence, and ultimately, lower educational attainment (Liu et al., 2004; Striplin, 1999).

The Effects of Psychosocial and Study Skill Factors on College Outcomes

A number of psychosocial and study skill factors have received support as important predictors of academic performance, retention, and bachelor’s degree completion among community college students. To begin, initial evidence to support the prominence of psychosocial and study skill factors can be found in the qualitative work of Townsend and Wilson (2006). In their study, Townsend and Wilson (2006) found that successful transfer students reported several psychosocial factors that they perceived as important to success at the university level. The participants indicated that the degree to which these factors were needed differed compared to the level which was required for their prior success at their respective community colleges. In particular, participants generally perceived that they had a greater degree of autonomy in terms of homework and classroom attendance at the university level. Consequently, they indicated a need for improved study skills (e.g., time management), enhanced academic discipline (e.g., conscientiousness, completing homework on time), and a smaller margin for error on assignments and tests.

The Effects of Psychosocial and Study Skill Factors on Academic Performance

In regard to academic performance outcomes, research suggests that psychosocial and study skill factors are important predictors. Ganz and Ganz (1988) examined the extent to which outside job responsibilities, personal problems, academic self-perceptions, and students' willingness to persist at academic-related tasks contribute to academic performance among a sample of 203 community college students. Results suggest that the most salient psychosocial predictors of poor academic performance include low reading self-efficacy beliefs, low academic self-efficacy beliefs, and low ability to persevere in completing academic-related tasks. Using 1,011 participants from a single community college system, Napoli and Wortman (1998) determined that social support and psychological well-being were both positively related to first semester grade point average. Similarly, Wild and Ebbers (2002) found that goal setting, goal flexibility, and a commitment to achieving academic goals were positively correlated with academic success and retention among community college students.

Peterson, Casillas, and Robbins (2006) conducted a study, which examined the incremental validity of two measures of non-cognitive factors in predicting the academic performance of 468 students enrolled at community colleges and four-year institutions. The researchers used the *Student Readiness Inventory* (SRI; Robbins et al., 2006) and the *Big Five Inventory* (BFI; Benet-Martinez & John, 1998; John & Srivastava, 1999) to measure both narrowly and broadly defined aspects of personality, respectively. The SRI is a 108-item self-report measure of more narrowly defined study skill and psychosocial factors (i.e., academic-related aspects of one's personality). The BFI is a 44-item instrument which measures the Big Five personality constructs (i.e., Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness). They determined that both measures were incrementally predictive of academic performance above and beyond age, socioeconomic status, and ethnicity. Broadly measured personality facets (i.e., in

particular, the BFI scales of Extraversion, Agreeableness, and Conscientiousness) were incrementally predictive of academic performance, accounting for 3% to 9% of the variance. However, Peterson et al. (2006) found that more narrowly defined personality facets (i.e., particularly the SRI scales of Academic Discipline, Study Skills, and Academic Self-confidence) accounted for a significantly larger proportion of the variance (i.e., 22% to 29%). This study demonstrates the validity of using non-cognitive factors to predict the academic performance of students who attend both community colleges and four-year institutions.

The Effects of Psychosocial and Study Skill Factors on Student Retention and Persistence

A greater body of literature exists which examines the impact of important psychosocial and study skill variables as they relate to persistence and retention among community college matriculates. The final portion of this section begins by reviewing the impact of psychosocial and study skill factors on bachelor's degree completion. Next, a review of the effects of broadly defined academic and social integration on persistence is provided. Finally, this section concludes with a discussion of the effects of more narrowly defined psychosocial and study skill factors (e.g., motivation, conscientiousness, and academic self-efficacy) on retention.

Research indicates that social connection and support, social and academic integration with the campus community, commitment to the academic institution, goal setting and goal commitments are all positively related to retention and/or degree completion. Pascarella, Smart, and Ethington (1986) provide the only identified study which examines the relationship between psychosocial factors and bachelor's degree completion. They used the Cooperative Institutional Research Program (CIRP) 1971-1980 survey data to examine which factors are most strongly related to long-term persistence and degree completion among bachelor's degree-seeking community college students. Consistent with Tinto's (1993) model of student retention, they found that social

integration (e.g., knowing faculty/staff and being involved in student organizations and/or extra-curricular activities), academic integration (e.g., attaining passing grades and being a member of an academic society), and institutional commitment (e.g., satisfaction with one's academic institution) were all significantly related to degree persistence (i.e., continuing to progress toward the attainment of a bachelor's degree) and degree completion.

Similarly, other researchers have identified social and academic integration as important factors related to persistence among community college students. Halpin (1990) examined the extent to which academic integration, social integration, and institutional and goal commitments distinguished students who persisted through the first semester of college from those who failed to persist or were academically dismissed. Halpin found that academic integration was the most salient predictor of persistence above and beyond background (i.e., gender, degree aspirations, and parents' education level) and environmental variables (i.e., commuting distance, working while enrolled, involvement in campus organizations, informal/academic conversations with faculty, and financial burden of college). Although to a lesser degree, both social integration and institutional and goal commitments were significant predictors as well. Halpin found that background and environmental variables correctly classified 63.1% of the cases in his sample (n = 99), while the incremental contribution of the integration variables (15.8%) brought the total percentage of correctly classified cases to 78.9%. Use of the integration variables alone resulted in the correct classification of 61.9% of cases. Employing a cross-validation sample (n = 199), 65.9% of cases were correctly identified using only the integration variables (Halpin, 1990). The results indicate the saliency of academic and social integration and institutional and goal commitments as important variables related to community college student retention.

Further evidence is provided by Napoli and Wortman (1996), who sought to meta-analytically examine the effect of academic and social integration on student

persistence using six studies (i.e., Munro, 1981; Pascarella & Chapman, 1983a, 1983b; Pascarella & Terenzini, 1983; Pascarella & Wolfe, 1983; Pascarella et al., 1986), which all employed the use of a community college sample. They found a significant and large positive effect size for academic integration on persistence ($g = 0.715$, $p < 0.0001$). In addition, they found a moderate effect size for social integration on persistence among community college students ($g = 0.459$, $p < 0.0001$). Mutter (1992) conducted a study examining which factors were most strongly correlated with persistence among a sample of 766 community college students who either persisted or dropped out of college. Mutter determined that the students who continued to be enrolled at the institution were significantly more likely to receive higher levels of social support and encouragement. In addition, they were significantly more likely to report greater academic integration and increased commitment to the pursuit of a college degree and to the academic institution.

In regard to more specific psychosocial variables, Napoli and Wortman (1998) confirmed and extended Mutter's (1992) results. They found that community college students, who were more likely to persist, reported strong social and academic integration and greater levels of commitment to their academic goals and the institution. Further, Napoli and Wortman (1998) found that several psychosocial variables significantly and positively influenced reported levels of academic integration (i.e., goal commitment, social support, psychological well-being, satisfaction with the college, and conscientiousness) and social integration (i.e., social support, psychological well-being, self-esteem, and satisfaction with college). These results suggest that specific psychosocial variables may mediate the relationship between integration and persistence. Further, Voorhees and Zhou (2000) found that community college students who reported greater goal orientations (i.e., they determined their goals, mapped out their educational plans, and managed their course loads) were more likely to persist than those who did not set and manage their goals.

Most recently, Hawley and Harris (2005-2006) conducted a single institution study to identify factors which positively and negatively impacted persistence among community college students. Specifically, they examined the extent to which personality and behavioral characteristics predicted retention or attrition in a sample of first-year community college students. Retention was defined as continued enrollment one year after beginning their college careers. Using discriminant function analysis, Hawley and Harris (2005-2006) grouped students into categories (retention vs. attrition) based on their individual characteristics as reported on the 2000 CIRP Freshman Survey. The models used to predict retention successfully predicted 78.8% of the retention cases, while successfully predicting 76.5% of the attrition cases.

In terms of specific personality and behavioral variables related to retention, Hawley and Harris (2005-2006) extended much of the aforementioned work and found that students who were academically-oriented, physically and emotionally healthy, and focused on creative activities were more likely to be enrolled one-year later. Further, students' expectations for, and accurate assessment of, barriers to their educational goals were moderately predictive of retention (e.g., plans to stay at the institution, transportation issues, and work/family responsibilities). This finding suggests that students who are able to identify barriers are more likely to plan for ways to overcome barriers. Hawley and Harris confirmed earlier findings which indicate the importance of social integration (e.g., Halpin, 1990; Mutter, 1992; Napoli & Wortman, 1996, 1998; Pascarella et al., 1986) as it relates to persistence. Specifically, they found that a greater level of active participation in campus-related leadership activities was moderately predictive of retention (Hawley & Harris, 2005-2006)

Hawley and Harris (2005-2006) found that the personality and behavioral variables most strongly related to attrition included higher levels of motivation to transfer, an expectation of being unable to finance college, greater job responsibilities outside of college, high activity levels outside of the college environment, and being

highly unfocused. Hawley and Harris posit that students' motivation to transfer is related to attrition due to the fact that many of these students successfully transfer to a four-year institution without formally severing their ties to the community college. Further, they opine that high levels of activity and being unfocused are suggestive of inadequate social and academic integration within the college community. Thus, they speculate that students were distracted from important activities and aspects of their experience related to greater academic and social integration due to high involvement in activities unrelated to the college environment.

The Effects of Narrowly Defined Psychosocial and Study Skill Factors on Academic Performance and Retention

As discussed previously, Peterson et al. (2006) provided evidence which suggests that narrowly defined psychosocial and study skill factors accounted for a significantly larger portion of the variance than more broadly defined personality facets in predicting academic performance. Additional empirical support concerning the importance of narrowly defined psychosocial and study skill factors, as related to academic performance and retention, is provided by a meta-analysis conducted by Robbins, Lauver, Davis, Langley, and Calstrom (2004) and the SRI national validity study conducted by Robbins, Allen, Casillas, Peterson, and Le (2006). Robbins and colleagues (2004) meta-analytically examined the relationship between key psychosocial and study skill factors and college outcomes, namely persistence/retention and academic performance. The authors used educational persistence and motivational theory to categorize psychosocial and study skill factors into nine constructs including (a) *achievement motivation*, the motivation to achieve success; (b) *academic goals*, one's persistence and commitment to action; (c) *institutional commitment*, one's confidence of and satisfaction with institutional choice; (d) *social support*, one's perception of the availability of the social networks that support them in college; (e) *social involvement*, the extent that students feel connected to the college environment; (f) *academic self-efficacy*, self-evaluation of one's

ability and/or chances for success; (g) *general self-concept*, general beliefs and perceptions about him/herself that influence actions and response; (h) *academic-related skills*, skills and abilities needed to effectively complete academic-related tasks; and (i) *contextual influences*, environmental influences related to the academic institution such as size, selectivity, and financial aid.

Robbins et al. (2004) identified 109 studies and computed a total of 476 effect sizes (197 were related to retention and 279 were related to academic performance), with sample sizes ranging between 40 to 3,369 for retention and 24 to 4,805 for academic performance. In terms of predictive validity, the authors found that academic self-efficacy and achievement motivation were the best predictors of academic performance, with effect sizes of .496 and .303, respectively. Other small to moderate predictors included social support ($\rho s = .109$), institutional commitment ($\rho s = .120$), social involvement ($\rho s = .141$) and academic goals ($\rho s = .179$). In regard to college student persistence/retention behavior, the results indicate moderate predictive validity for the constructs of academic goals ($\rho s = .340$), academic self-efficacy ($\rho s = .359$), and academic-related skills ($\rho s = .366$). Other small to moderate predictors of retention behavior included social involvement ($\rho s = .216$), social support ($\rho s = .257$), and institutional commitment ($\rho s = .262$).

The incremental contribution (ΔR^2) of psychosocial and study skill factors above and beyond the predictive validity of socioeconomic status, standardized test scores, and high school grade point average was determined for retention (academic self-efficacy, $\Delta R^2 = .015$; social involvement, $\Delta R^2 = .017$; academic goals, $\Delta R^2 = .029$; social support, $\Delta R^2 = .033$; institutional commitment, $\Delta R^2 = .041$; and academic-related skills, $\Delta R^2 = .068$) and academic performance (academic goals, $\Delta R^2 = .007$; achievement motivation, $\Delta R^2 = .016$; and academic self-efficacy, $\Delta R^2 = .033$; Robbins et al., 2004). The findings of this study suggest that psychosocial and study skill factors are strongly correlated with academic persistence and performance among college students, particularly for students

who attend four-year institutions. Further, the meta-analysis suggests that psychosocial and study skill variables are useful in predicting the persistence and performance behavior of admitted college students, over and above traditional predictors. Although the incremental contribution (i.e., the ΔR^2 values) noted above seems small, it is important to realize that the percent of variance accounted for by these factors is in addition to that which has been accounted for by traditional robust predictors. It is important to note that all of the samples from the studies included in the Robbins et al. (2004) meta-analysis were comprised solely of four-year institution students.

As previously mentioned, additional empirical support concerning the predictive validity of narrowly defined psychosocial and study skill factors among community college students is provided by Robbins, Allen, Casillas, Peterson, and Le (2006). Based on the meta-analytic findings of Robbins et al. (2004), Robbins and colleagues (2006) created a self-report measure (i.e., the SRI) of key psychosocial and study skill factors and tested the predictive validity of the SRI among first-year college students at both community colleges and four-year institutions. Participants included 14,464 first-year students from 23 community colleges (n = 5,956) and 25 four-year institutions (n = 8,508). The SRI consists of 10 motivational, skill, social, and self-management scales. The authors sought to determine the SRI's predictive validity as it relates to first semester grade point average, cumulative grade point average (i.e., at the end of year one), and retention at the end of the first semester and the end of the first year for college matriculates at both two-year and four-year institutions.

Robbins and colleagues (2006) developed two regression models (i.e., one for community colleges and one for four-year institutions) to test the predictive validity and incremental contribution of the self-reported psychosocial and study skill factors. They determined that the SRI scales possessed predictive validity for the aforementioned outcomes. The SRI scales continued to be important predictors after first controlling for the effects of academic variables (i.e., community colleges vs. four-year institutions,

institutional selectivity, institutional size, institution location, institutional demographic make-up, and institutional control), student demographics (i.e., race, ethnicity, socioeconomic status, and gender), and students' prior academic achievement (i.e., high school grade point average and standardized test scores). Predictor variables were entered into the model in a blockwise fashion with institutional variables entered first, followed by demographic variables, then prior academic achievement variables, and finally the scale scores of the SRI.

In terms of academic performance, all four blocks contributed incrementally to the proportion of variance explained for both first-semester grade point average (R^2 = .336) and first-year cumulative grade point average (R^2 = .390) among students at the four-year institutions (Robbins et al., 2006). Psychosocial and study skill factors were found to account for 3.5% of the variance in first-semester grade point average and 3.4% of the variance in first-year cumulative grade point average above and beyond that which was accounted for by the preceding three predictor blocks. For community colleges, all four blocks contributed incrementally to the prediction of first-semester grade point average (R^2 = .191) and first-year cumulative grade point average (R^2 = .214). After accounting for institutional, demographic, and prior academic achievement effects, psychosocial and study skill factors accounted for an additional 3.3% of the variance of first-semester grade point average and an additional 2.7% of the variance of first-year cumulative grade point average.

Concerning retention, Robbins et al. (2006) entered the predictor variables in the same blockwise manner described above. They found similar results in both the community college and the four-year institution models. All four blocks contributed incrementally to the proportion of variance accounted for in first semester retention (R^2 = .050 and R^2 = .057, respectively) and first-year retention (R^2 = .049 and R^2 = .090, respectively). Again, it is important to remember that the contributions found here are

small, but represent an increase in the percent of the variance accounted for above and beyond that which is predicted based solely upon traditional predictors alone.

Regarding the effects of specific SRI scales, the results indicate that *Academic Discipline* (i.e., the degree to which a student sees him/herself as hardworking and conscientious), *Social Activity* (i.e., the degree to which the student feels comfortable meeting and interacting with others), and *Emotional Control* (i.e., a student's ability to manage strong emotions) were incrementally predictive of both academic performance and retention for both community college and 4-year institution samples. Finally, *Commitment to College* (i.e., the student's commitment to stay in school and earn a degree) and *Social Connection* (i.e., the degree to which a student feels connected and involved in the college community) were both found to be predictive of retention behavior.

To summarize, individual differences and psychosocial factors have been identified as possible factors which may moderate the educational attainment gap between matriculates to community colleges and four-year institutions (c.f., Cabrera et al., 2005; Carnevale & Fry, 2000; Dougherty, 1992; Featherman & Carter, 1976; Jencks et al., 1976; Knox et al., 1993; Pascarella & Terenzini, 2005). The evidence supports the importance of psychosocial and study skill variables in explaining the educational attainment process among community college samples. However, further research is needed to determine whether these variables moderate students' continued enrollment behavior. There appears to be an absence of research examining whether the effects of initial enrollment location on persistence and degree completion depend on psychosocial and study skill variables.

Summary of the Effects of Student Characteristics on Educational Attainment

The literature suggests that the effects of initially enrolling at a community college on the probability of students' educational attainment may depend on some

student characteristics. In terms of race, the only consistent finding indicates that if educational attainment is dependent on race, then White students benefit to a greater extent from first enrolling at the community college than racial/ethnic minority students. The findings consistently suggest that first-generation college students are significantly less likely to persist, transfer, and attain a bachelor's degree than second-generation college students and students whose parents have some college experiences. Compared to students of similar academic preparation and high family income, there is strong evidence which indicates that students from low family income backgrounds are generally more likely to begin their postsecondary career at the community college level. Low income students are less likely to aspire to a four-year degree, less likely to transfer to a four-year institution, and less likely to attain a bachelor's degree than more economically advantaged students.

Hilmer (1997) provides the only study to examine whether the effects of initial community college attendance on the selectivity of the four-year institution to which a student chooses to transfer depends on students' characteristics. His findings suggest that community colleges fulfill their transfer mission and promote the social mobility of disadvantaged individuals. Specifically, his findings suggest that students from low family income, low measured academic ability, and low high school performance are able to transfer into four-year institutions of greater selectivity than they would have been able to initially attend directly out of high school. However, his findings have limited generalizability due to the use of a sample which consisted of only successful community college transfer students. The sample used in his study failed to include a significant number of bachelor's degree aspirants who failed to successfully transfer. A consistent theme echoed throughout this review suggests that community college students and disadvantaged student groups may differ from more advantaged four-year matriculates on other important psychosocial factors.

The literature indicates that there may be inherent differences in academically important psychosocial factors among students who begin their postsecondary education at a community college (particularly among disadvantaged students) and those who start at four-year institutions (Dougherty, 1992; Hellman, 1996; Horn, et al., 2006; Mitchell, 1997; Striplin, 1999). The effects of psychosocial and study skill factors on the academic performance and retention of community college students have received empirical support in the literature as important predictors of these outcomes (cf., Ganz & Ganz, 1988; Halpin, 1990; Hawley & Harris, 2005-2006; Mutter, 1992; Napoli & Wortman, 1996, 1998; Pascarella et al., 1986; Peterson et al., 2006; Robbins et al., 2006; Townsend & Wilson, 2006; Vorhees & Zhou, 2000; Wild & Ebbers, 2002). The findings from Robbins et al. (2006) suggest that students who are (a) conscientious and willing to work hard (i.e., *Academic Discipline*), (b) comfortable in meeting and interacting with new people (i.e., *Social Activity*), able to manage their emotions (i.e., *Emotional Control*), (c) feeling connected to and involved with the college community (i.e., *Social Connection*), and (d) committed to earning a degree (i.e., C*ommitment to College*) are more likely to perform better academically and remain enrolled in higher education than those students who endorse lower levels of these psychosocial and study skill factors. These results are well supported by previous research (i.e., Halpin, 1990; Hawley & Harris, 2006; Mutter, 1992; Napoli & Wortman, 1996, 1998; Pascarella et al, 1986; Peterson et al., 2006; Vorhees & Zhou, 2000). Although implicated by numerous researchers as important variables in the educational attainment process, no published research to date has introduced controls for psychosocial and study skill variables when examining the impact of community college attendance on the odds of students' longer-term education enrollment outcomes. Further examination is warranted in this regard and to determine whether these factors moderate the odds of longer-term enrollment outcomes among the college student population.

Summary of the Literature Review

This review has provided a thorough examination of the literature pertaining to the effects of higher education on the likelihood of educational attainment and the subsequent social mobility of college students. This review supports educational attainment as the principle path toward upward social mobility. The importance of educational attainment in the process of social mobility is evidenced by its direct and mediating effects on the likelihood of gaining occupational status and income after controlling for the effects of background demographic variables (Day & Newburger, 2002; Pascarella & Terenzini, 1991, 2005; Perna, 2005; Stevens & Featherman, 1981; Walpole, 2003).

As the "passport to the American middle class," the effects of attaining a baccalaureate degree from institutions of varying selectivity and control were first examined (Pascarella & Terenzini, 1991, p. 369). The literature indicates that students who graduate from privately-controlled institutions are more likely to receive greater economic benefits than their peers who graduate from publicly-controlled institutions of similar selectivity (Brewer et al., 1999). Next, the effects of attending institutions of varying selectivity were examined. Specifically, the literature suggests a significant and positive linear relationship between levels of institutional selectivity and social mobility-related outcomes (i.e., educational attainment, occupational status, and income level; Brewer et al., 1999; Ehrenberg, 2004; Ethington & Smart, 1986; Hilmer, 2000; Karabel & Astin, 1975; Pascarella & Terenzini, 1991, 2005; Rumberger & Thomas, 1993; Smart, 1986; Smart & Pascarella, 1986; Thomas, 2003).

Next, due to the fact that a majority of disadvantaged student groups initiate their postsecondary education at the community college level (Cohen & Brawer, 1989; Dougherty, 1987, 1992; Horn et al., 2006; McDonough, 1997; Pascarella & Terenzini, 1991, 2005), the effects of beginning one's education at a community college, rather than a four-year institution, on social mobility outcomes were reviewed. The literature

suggests that students who initiate their education at a community college are roughly 29-33% less likely to persist and earn a four-year degree than similar students who initiate their academic pursuits at four-year institutions (Alfonso, 2006). Further, the research suggests that students are equally as likely to earn similar incomes for analogous work after controlling for the effects of educational attainment, regardless of where they begin their education. However, there is evidence that supports an indirect effect of initial community college enrollment on income level. Specifically, community college matriculates incur a lower likelihood of educational attainment, which indirectly impacts income levels due to the greater likelihood of holding occupations of lower status (Monk-Turner, 1990; Pascarella & Terenzini, 2005; Whitaker & Pascarella, 1994).

The last portion of this review focused on the effects of student characteristics on educational attainment. Specifically, this portion sought to determine whether race, family income variables, and students' college generation status influenced the odds of educational attainment. In addition, the effects of academically-related psychosocial factors and study skill factors on the probability of educational attainment were reviewed.

In regard to race, the literature reviewed offered little clarity. There were similar studies, using analogous nationally representative samples, which supported and refuted a moderation effect of race on educational attainment (cf. Bailey & Weininger, 2002; Ganderton & Santos, 1995; Lee & Frank, 1990; versus Lee et al., 1993; Swanson, 2002, respectively). The only agreement in the literature reviewed here is if educational attainment depends on race, then White students tend to be privileged in this regard (Bailey & Weininger, 2002; Feldman, 1993; Lee & Frank, 1990; Townsend et al., 1993).

In regard to generation status, the findings suggest that first-generation college students are significantly less likely to persist, transfer, and graduate than students whose parents have either attained some college education or hold a bachelor's degree or higher. Further, the disparity in educational attainment between first-generation students and second-generation students appears to grow greater with each year of college completed

and for each degree conferred by the second-generation students' parents (Pascarella & Terenzini, 2005). Finally, in terms of family social class variables, the literature indicates that low income students are generally more likely to enroll at a community college and less likely to aspire to a four-year degree. When they do enroll, low income students are less likely to transfer to a four-year institution and to attain a bachelor's degree than students of similar academic preparation and higher family income (Cabrera et al., 2005).

In the only study of its kind, Hilmer (1997) determined that college students are able to transfer into more selective universities if they first enter higher education at the community college level rather than directly attending a four-year institution. He found that this effect was moderated by family income and academic preparation. Specifically, students of low family income, low academic ability, and poor high school academic performance benefit the most from initial community college enrollment.

Finally, a sizeable literature exists which supports the important role of key psychosocial and study skill variables in the educational attainment process (Ganz & Ganz, 1988; Halpin, 1990; Hawley & Harris, 2005-2006; Mutter, 1992; Napoli & Wortman, 1996, 1998; Pascarella, et al., 1986; Peterson et al., 2006; Robbins et al., 2004; Robbins et al., 2006; Townsend & Wilson, 2006; Vorhees & Zhou, 2000; Wild & Ebbers, 2002). In their meta-analytic review, Robbins et al. (2004) determined that psychosocial and study skill variables incrementally contributed to the prediction of college students' academic performance and retention above and beyond that which was accounted for by traditional predictors. This work was expanded upon and extended to community college students by Robbins et al. (2006), who found that the narrowly defined psychosocial variables of academic discipline, social activity, emotional control, social connection, commitment to college were incrementally predictive of both two- and four-year college students' academic performance and retention.

Overall, this review suggests that initial community college enrollment is related to a higher likelihood of detrimental effects on students' educational attainment.

However, little clarity is provided concerning whether the effect of community college enrollment on educational attainment depends on students' characteristics. Specifically, there is a dearth of research examining (a) the types of institutions (i.e., in terms of control and selectivity) community college transfer students are able to attend, and (b) whether the type of transfer institution attended depends on students' characteristics. Due to methodological constraints, the results of Hilmer's (1997) seminal study in this area are restricted in terms of generalizability to community college students who aspire to the baccalaureate degree. Therefore, additional research on this topic is needed.

Rationale for the Proposed Study

There are a variety of limitations to the current body of research examining the effects of initial community college enrollment on students' educational attainment. The proposed study will address these limitations. One of the major goals of this study is to contribute to the understanding of how initial community college enrollment is related to the educational attainments of college students.

At the broadest level, this study will contribute to the body of literature by employing a two-group design, which will allow us to determine whether initial enrollment is related to different effects on the social mobility paths of college students. In this regard, this study will provide greater clarity to the extent to which bachelor's degree-seeking community college students are able to transfer into the upper divisions of four-year degree granting institutions, as compared to their counterparts who first began at a four-year institution. Further, this study will contribute to an understanding of whether initial community college enrollment is associated with variations in the path to social mobility; as evidenced by the type of four-year institutions to which community college students are able to transfer (i.e., in terms of institutional control and selectivity). In this regard, there are numerous studies which indicate that community college enrollment is related to a greater probability of negative educational attainment outcomes (Pascarella & Terenzini, 2005). However, the literature offers no evidence concerning the

types of institutions community college transfer students are able to attend. These outcomes (i.e., transfer, level of institutional selectivity, and type of institutional control) were chosen because numerous researchers have indicated that the bachelor's degree, institutional selectivity, and institutional control produce varying effects on social mobility-related outcomes (Pascarella & Terenzini, 2005).

In addition to examining the educational attainments of community college students in general, this study will contribute to the current body of literature by building upon the work of Hilmer (1997). Hilmer provided evidence to suggest that initial community college enrollment provided underprivileged student groups with greater opportunity for social mobility than they would have attained had they entered a four-year college or university directly from high school. Specifically, he found that students of low family income, low academic ability, and poor high school performance benefited the most in terms of the level of selectivity of the transfer institution. However, his study was methodologically limited by his use of only post-transfer community college students. In this regard, he failed to account for students who aspired to a bachelor's degree upon beginning their postsecondary education, but failed to successfully transfer into a four-year institution. This study will build upon the findings of Hilmer by using a nationally representative sample of pre-transfer community college students who aspire to a four-year degree.

Hilmer (1997) failed to consider whether the effects of initially enrolling at a community college on the odds of being enrolled at a selective or highly-selective institution depended on additional student characteristics. Therefore, in addition to extending his findings in terms of family income level and academic ability, this study will consider whether race, generation status, and psychosocial factors also moderate the odds of being enrolled at selective and highly-selective four-year institutions.

The current body of literature also fails to provide evidence concerning whether the effects of initially enrolling at a community college on the odds of transferring to a

privately-controlled institution depend on student characteristics. Therefore, this study will add to the literature by considering whether race, family income, generational status, academic ability, and/or psychosocial factors moderate the effects of community college enrollment on the odds of transferring to a privately-controlled institution.

Finally, numerous researchers implicate differences in psychosocial factors among two-year and four-year students as possible variables which may contribute to variations in educational attainment (Dougherty, 1992; Hellman, 1996; Horn et al., 2006; Mitchell, 1997; Nelson et al., 2006; Pascarella & Terenzini, 2005; Striplin, 1999; Tsui, 2003). Therefore, this study will extend previous research by introducing controls for psychosocial factors and testing for possible moderation effects on the aforementioned outcomes.

The Study

Purpose

This study seeks to provide further clarification concerning the controversy surrounding the transfer mission of community colleges, particularly as this role relates to the social mobility process. Given that one of the roles of the community college is to provide individuals (particularly disadvantaged students) with an alternative path by which to gain a baccalaureate degree, it is important to determine whether initial enrollment at a community college helps or hinders the educational attainments of these college students. The current study is designed to compare baccalaureate degree aspirants who initiate their postsecondary education at the community college with similar students who begin their college careers at a four-year institution on the odds of their enrollment behavior three-years later.

Thus, the questions posed in this study ask whether student characteristics moderate the effect of initial enrollment at a community college (versus a four-year degree granting institution) on the odds of students' path to social mobility three years later as indicated by their enrollment at (a) a four-year-degree granting institution, (b) a

selective or highly selective four-year degree-granting institution, and (c) a private four-year degree-granting institution. These outcomes were chosen due to the evidence that supports the bachelor's degree as the primary route to social mobility (cf. Pascarella & Terenzini, 2005); and the findings that suggest that students who graduate from selective and highly selective institutions, as well as privately-controlled institutions, are more likely to attain greater social mobility in terms of educational attainment, occupational status, and income level (e.g. Brewer et al., 1999; Eide et al., 1998; Kingston & Smart, 1990; Pascarella & Terenzini, 2005).

There is evidence to suggest that educational attainment depends on student characteristics such as family income and academic ability (e.g., Cabrera et al., 2006; Hilmer, 1997), generational status (e.g., Berkner et al., 2002; Pascarella & Terenzini, 2005), and race (Ganderton & Santos, 1995; Lee & Frank, 1990). If the odds of educational-related outcomes are diminished for these community college students, then the legitimacy of the role of community colleges as a means by which to gain a bachelor's degree, and thus social mobility, comes into question.

Research Questions

In order to contribute to the body of literature on the effects of initial college enrollment location on students' path to social mobility, the following research questions were addressed:

1. Are the overall effects of initially enrolling at a community college moderated by the student's race?

   Specifically:

   a) Does the effect of initially enrolling at a community college on the odds of being enrolled at a four-year degree granting institution three years later depend on the student's race?

b) Does the effect of initially enrolling at a community college on the odds of being enrolled at a selective or highly selective four-year degree granting institution three years later depend on the student's race?

c) Does the effect of initially enrolling at a community college on the odds of being enrolled at a private four-year degree granting institution three years later depend on the student's race?

2. Are the overall effects of initially enrolling at a community college moderated by the student's generational status?

   Specifically:

   a) Does the effect of initially enrolling at a community college on the odds of being enrolled at a four-year degree granting institution three years later depend on the student's generational status?

   b) Does the effect of initially enrolling at a community college on the odds of being enrolled at a selective or highly selective four-year degree granting institution three years later depend on the student's generational status?

   c) Does the effect of initially enrolling at a community college on the odds of being enrolled at a private four-year degree granting institution three years later depend on the student's generational status?

3. Are the overall effects of initially enrolling at a community college moderated by the student's family social class as measured by family income?

   Specifically:

   a) Does the effect of initially enrolling at a community college on the odds of being enrolled at a four-year degree granting institution three years later depend on the student's family income?

   b) Does the effect of initially enrolling at a community college on the odds of being enrolled at a selective or highly selective four-year degree granting institution three years later depend on the student's family income?

c) Does the effect of initially enrolling at a community college on the odds of being enrolled at a private four-year degree granting institution three years later depend on the student's family income?

4. Are the overall effects of initially enrolling at a community college moderated by the student's prior academic achievement?

   Specifically:

   a) Does the effect of initially enrolling at a community college on the odds of being enrolled at a four-year degree granting institution three years later depend on the student's prior academic achievement?

   b) Does the effect of initially enrolling at a community college on the odds of being enrolled at a selective or highly selective four-year degree granting institution three years later depend on the student's prior academic achievement?

   c) Does the effect of initially enrolling at a community college on the odds of being enrolled at a private four-year degree granting institution three years later depend on the student's prior academic achievement?

5. Are the overall effects of initially enrolling at a community college moderated by the student's psychosocial factors?

   Specifically:

   a) Does the effect of initially enrolling at a community college on the odds of being enrolled at a four-year degree granting institution three years later depend on the student's psychosocial factors?

   b) Does the effect of initially enrolling at a community college on the odds of being enrolled at a selective or highly selective four-year degree granting institution three years later depend on the student's psychosocial factors?

c) Does the effect of initially enrolling at a community college on the odds of being enrolled at a private four-year degree granting institution three years later depend on the student's psychosocial factors?

CHAPTER THREE: METHODOLOGY

This chapter will describe the methodology and research design of the study. First, the participants in this study are a convenience sample drawn from an intact data set. The sample used in the current study is a subset of the original sample employed in ACT's SRI national validity study (see Robbins et al., 2006). Therefore, the rationale and methods for the SRI validity study will be provided. This will include an overview of the participating SRI institutions from which the current participant pool is drawn, followed by a brief description of the original SRI participants. Second, participant inclusion criteria will be discussed as well as the rationale for the criteria. Third, a description of the procedure used to attain participants and collect data for the current study will be provided. Fourth, the measures used to collect students' background/demographics, prior academic performance, plans and expectations for college, psychosocial factors, and enrollment outcomes will be discussed. In addition, the psychometric properties of the measures will be presented. Finally, the statistical analyses used in answering the research questions will be provided.

The SRI Validity Study

The SRI is a self-report survey intended to assess students' self-perceptions of psychosocial and study skill factors. The rationale for conducting the SRI validity study was to determine whether the effects of self-reported psychosocial factors were predictive of first-year college academic performance and retention outcomes among both community college and four-year matriculates (Robbins et al., 2006).

Institutions

Participants were recruited from two-year and four-year colleges and universities that have high numbers of ACT-tested students and who agreed to participate in a norming and validity study of ACT's Student Readiness Inventory. The institutions included in the SRI national validity study were 23 two-year and 25 four-year institutions located in 25 states from primarily the Midwestern and Southeastern United States. These

institutions were purposefully chosen to represent various levels of institutional selectivity. The entering first-year student body at the two-year institutions varied in size from 219 to 4,571 students. The entering first-year student body at the four-year institutions ranged from 221 to 6,590 students.

Participants

The original SRI participants were 14,642 students, representing 42 different states, who entered college for the first time in the fall 2003 semester. All students included in the original study completed the SRI and the SRI College Answer Sheet during summer or fall orientation programs or at some point in the first six weeks of the 2003 fall semester during academic courses comprised of primarily first-year students (e.g., English composition, elementary psychology). Participation in the study was voluntary and students were not offered any compensation. Institutions reported that most students who were asked to participate did so. After discarding surveys with random response patterns or high levels of missing responses, a total of 14,464 (98.8%) SRI surveys remained with 5,956 (41.2%) from two-year institutions and 8,508 (58.8%) from four-year institutions.

The original SRI participants were primarily from the south-central United States (37.4%), with 19% from west north-central, 15.2% from east north-central, 9.8% from south Atlantic, 5.9% from Pacific, 4.3% from Mountain, and 0.7% from northeastern states. Nearly 8% of the sample did not disclose their home state.

Inclusion Criteria

There are a number of inclusion criteria that have been set so as to better isolate the effect of initial community college enrollment on students' enrollment status at the beginning of year four. First, participants used in the current study must have been between the ages of 17 and 20 in the fall of 2003 so as to restrict the number of financially independent students, who had been found to significantly differ from financially dependent students in terms of greater work and familial obligations. Further,

financial independence has been related to detrimental effects on students' educational attainment (Cabrera, et al., 2006; Horn et al., 2006; Lanni, 1997; Tinto et al., 1994).Therefore, in order to control for the effects of financial independence these student groups were excluded from the current study.

Second, only students who initially indicated aspirations that included a bachelor's degree or higher in 2003 were included in this study. Clearly, degree aspirations are predictive of educational attainment (Alfonso, 2006; Pascarella & Terenzini, 2005; Pascarella et al., 2003). As the focus of this study was to determine whether initial community college enrollment affects the path to social mobility through bachelor's degree attainment, it did not make sense to consider students who enter community colleges with aspirations for an associate's level degree or to complete a certificate program.

Third, due to the predictive validity and potential for a moderating effect of prior academic achievement (i.e., standardized test scores, high school grade point average; ACT, 1997; Robbins et al., 2006), background and demographic variables (i.e., family income, parents' education level, gender, race; Berkner et al., 2002; Cabrera et al., 2006; Ganderton & Santos, 1995; Hilmer, 1997; Lee & Frank, 1990; Pascarella & Terenzini, 2005; Robbins et al., 2006), and student's plans and expectations for college (i.e., financial aid, expected employment hours while enrolled, college enrollment status; Alfonso, 2006; Pascarella & Terenzini, 2005; Pascarella et al., 2003); only students who provided this information were included in the current study.

Finally, measures of specific psychosocial factors are predictive of successful college outcomes (Robbins et al., 2006). Due to the potential for differences in psychosocial factors between community college matriculates and their four-year counterparts, controlling for these effects may assist in better isolating the effect of community colleges on the outcomes of interest in this study. Further, psychosocial factors have been implicated by many researchers as potential moderators, but to this

point, little control has been introduced for these variables (Dougherty, 1992; Hellman, 1996; Horn, et al., 2006; Mitchell, 1997; Striplin, 1999). This study is designed to determine whether the effects of initial enrollment location on the odds of enrollment behavior three years later depend on differences in psychosocial factors between community college matriculates and their four-year counterparts. Therefore, only students for whom this information was available were included in the current sample. Students from the original SRI validity study missing any of the key information described in this section were excluded from the current study. Preliminary inclusion analyses indicated that these criteria yielded a sample of 7,147 participants.

Procedure

Data Collection

Participants in this study were drawn from a convenience data set. They originally participated in ACT's SRI national validity study during the fall of 2003 (cf. Robbins et al., 2006). The predictor variables used in this study were previously collected as part of ACT's SRI national validity study. Outcome data from the 2006-2007 academic year were determined using data from the National Student Clearinghouse (National Student Clearinghouse, 2007).

Outcome Variables

The outcome variables of interest in this study are dichotomous and included if, and where, students were enrolled at the beginning of what would have been their fourth year of college if they had remained continuously enrolled since entering college in the fall semester of 2003 (i.e., the 2006-2007 academic year). Specifically, the outcome variables of interest were (a) college enrollment location at the beginning of the fourth year; and if still enrolled at the beginning of the fourth year (b) college enrollment at a selective or highly selective four-year institution, and (c) college enrollment at a privately-controlled four-year institution.

An institutions' level of selectivity was determined via ACT's classification schemes according to the description provided by Robbins and colleagues (2006) as follows:

> (a) *open* (all high school graduates accepted, to limit of capacity), (b) *liberal* (some first-year students from lower half of high school graduating class), (c) *traditional* (majority of accepted 1st-year students in top quarter of high school graduating class), (d) *selective* (majority of accepted 1st-year students in top quarter of high school graduating class), and (e) *highly selective* (majority of accepted 1st-year students in top 10% of high school graduating class (p. 602).

Predictor Variables

The predictor variables in this study included (a) initial enrollment location (i.e., at a community college versus a four-year institution), (b) background/demographic (i.e., gender, generation status, family income level, race), (c) prior academic achievement (i.e., high school grade point average and ACT composite score or concordant score), (d) plans and expectations for college (i.e., hours working, enrollment status, financial aid, degree aspirations), and (e) psychosocial factors (i.e., specifically Academic Discipline, Commitment to College, Academic Self-Confidence, Emotional Control, Social Activity, and Social Connection; Robbins et al., 2006).

Variables

Data were collected from five sources including the SRI (psychosocial factors), the SRI College Survey Answer Sheet (background/demographic variables, plans and expectations for college, self-report prior academic achievement), the ACT college entrance exam (prior academic achievement), the COMPASS college placement exam (prior academic achievement), and the National Student Clearinghouse (outcome data). With the exception of the outcome data, the aforementioned variables were used to control for possible confounds and to better isolate the effect of initial enrollment path (at a community college versus four-year institution) on the odds of enrollment behavior three years later. Second, background/demographic data (i.e., generational status, family income, and race), prior academic achievement, and psychosocial factors were used to test whether they moderated the enrollment outcomes of interest.

Background and Demographic Variables

Background and demographic variables were obtained from the SRI College Survey Answer Sheet, a self-report measure which was completed by all participants in this study in the fall of 2003. Background/demographic information includes participants' age, gender, race, generational status (i.e., as determined by parents' education level), and family income.

Plans and Expectations for College

Students' plans and expectations for college were acquired through their self-report on the SRI College Survey Answer Sheet. The SRI College Survey Answer Sheet asked students to indicate their intended college-enrollment status (i.e., full-time or part-time) and whether they planned to receive financial aid. Further, students were asked to indicate their degree aspirations and the number of hours they anticipated working per week while enrolled in college.

Psychosocial Factors

Participants' self-reported psychosocial and study skill factors were measured using ACT's SRI in the fall of 2003. The SRI is a 108-item survey intended to assess students' self-perceptions of psychosocial and study skill factors. The SRI is comprised of ten scales, which were derived based on the Robbins, Lauver, Le, Davis, Langley, and Carlstrom (2004) meta-analysis. The SRI scales are believed to represent four broad constructs including motivation, social engagement, skills, and self-regulation (Robbins et al., 2006). Each scale is comprised of 10-12 items using Likert-type scale responses ranging from 1-6. Individuals are to endorse the extent to which each item applies to their perception of self. Each scale of the SRI has a total score ranging from 10-12 to 60-72. The ten scales making up the SRI include (a) *Academic Discipline*, defined as the amount of effort a student puts into schoolwork and the degree to which he or she sees himself or herself as hardworking (sample item, *I consistently do my school work well*); (b) *Academic Self-Confidence*, defined as the belief in one's ability to perform well in school

(sample item: *I achieve little for the amount of time I spend studying*); (c) *Commitment to College*, defined as one's commitment to staying in college and getting a degree (sample item: *A college education will help me achieve my goals*); (d) *Communication Skills*, defined as attentiveness to others' feelings and flexibility in resolving conflicts with others (sample item: *I'm willing to compromise when resolving a conflict*); (e) *Emotional Control*, defined as one's responses to and management of strong feelings (sample item: *I have a bad temper*); (f) *General Determination*, defined as the extent to which one strives to follow through on commitments and obligations (sample item: *It is important for me to finish what I start*); (g) *Goal Striving*, defined as the strength of one's efforts to achieve objectives and end goals (sample item: *I bounce back after facing disappointment or failure*); (h) *Social Activity*, defined as one's comfort in meeting and interacting with other people (sample item: *I avoid activities that require meeting new people*); (i) *Social Connection*, defined as one's feeling of connection and involvement with the college community (sample item: *I feel part of this college*); and (j) *Study Skills*, defined as the extent to which students believe they know how to assess an academic problem, organize a solution, and successfully complete academic assignments (sample item: *I summarize important information in diagrams, tables, or lists*; ACT, 2008; Robbins et al., 2006).

The SRI scores have demonstrated adequate internal consistency with alphas ranging from 0.80 to 0.87 (Robbins et al., 2006) and 0.83 to 0.90 (Peterson et al., 2006) across the ten scales. Peterson, Casillas, and Robbins (2006) conducted a study which extended the construct validity of the SRI in three ways. First, they established convergent/discriminant validity with the Big Five personality domains (i.e., Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness). Using a sample of 468 college students from five institutions (3 community colleges and 2 four-year institutions), they found that several SRI scales demonstrated convergent relationships with many scales of the BFI (Benet-Martinez & John, 1998; John & Srivastava, 1999) including Emotional Control to Neuroticism (-0.67), Social Activity to

Extraversion (0.73), Communication Skills to Agreeableness (0.67), and Academic Discipline to Conscientiousness (0.66). This suggests that SRI scales measure similar facets of personality as the BFI. Evidence of discriminant validity is demonstrated by the lack of relationship between the SRI scales and the BFI scales intended to measure divergent facets of personality (e.g., Emotional Control and Extraversion [0.17] and Academic Self-Confidence and Agreeableness [0.16]). Second, Peterson et al. (2006) examined the *Marlowe-Crowne Social Desirability Scale* (Barger, 2002; Crowne & Marlowe, 1960) and found a minimal relationship between social desirability and the SRI scales as well as the BFI, indicating that the SRI is not more prone to the effects of self-presentation than other self-report measures. Finally, in two separate studies the SRI demonstrated incremental validity in the prediction of cumulative grade point average over and above that which was predicted by the BFI and/or other traditional predictors (cf., Peterson et al., 2006; Robbins et al., 2006). Finally, for retention, the SRI has demonstrated predictive validity after controlling for institutional, demographic, and prior academic achievement variables. In particular, the scales *Academic Discipline*, *Commitment to College*, and *Social Connection*, were found to significantly add to the prediction of first year retention among four-year students, with an R^2 increase of 0.015 above and beyond the aforementioned traditional predictors (i.e., from 0.075 to 0.090; Robbins et al., 2006). Among the community college sample, these same scales produced an R^2 increase of 0.016 (i.e., from 0.033 to 0.049; Robbins et al., 2006).

Prior Academic Achievement

Participants' prior academic achievements were obtained via self-report on the SRI College Student Survey Answer Sheet and if available, verified through ACT's records. All participants were asked to provide their high school grade point average and their ACT and/or SAT composite scores on the SRI College Student Survey Answer Sheet in the fall of 2003.

Standardized test scores and high school grade point averages are widely accepted as traditional predictors of college retention and college academic performance (ACT, 1997; Bejar & Blew, 1981; Robbins et al., 2004; Robbins et al., 2006; Willingham, 1985; Willingham, Lewis, Morgan, & Ramist, 1990). Because community colleges provide remedial education, it was expected that there would be differences between the community college sample and the four-year sample in regard to prior academic achievements. Therefore, these pre-enrollment differences were controlled for in order to more accurately determine the effect of initial enrollment path on the odds of enrollment outcomes three years later. ACT Composite score, or in some cases concordant ACT Composite score, was used as a measure of pre-collegiate academic achievement. For students that did not take the ACT, but for whom there was either an available SAT-I score or a COMPASS score, concordant scores were calculated consistent with the methods of Robbins and his colleagues (2006). For those who only provided their SAT-I scores, his or her concordant ACT Composite score was calculated according to the methods of Dorans, Lyu, Pommerich, and Houston (1997). In regard to students from community colleges, COMPASS scores do not include a composite measure. Therefore, pseudo-composite scores were created, as described by Robbins et al. (2006), using the sum of COMPASS Writing Skills and Pre-algebra scores. For students that did not take the COMPASS Pre-algebra test, but did take the Algebra test, pseudo-composite scores were created using the sum of the COMPASS Writing Skills and Algebra scores. For students in the community college sample who did not take the ACT Assessment or provide SAT-I scores, concordant ACT Composite scores were derived based on an established concordance using a large sample of jointly tested students through equipercentile equating (see Kolen & Brennan [1995] for a discussion of this procedure).

The ACT Composite score is highly reliable and predictive of successful college outcomes (ACT, 1997). Further, the ACT Composite score is highly correlated (0.92) with the SAT I score (i.e., Verbal + Mathematics; Dorans et al., 1997). COMPASS is

used to assist in academic advising with the intent of increasing retention and academic performance through accurate course placement (Robbins et al., 2006). COMPASS assesses students' mathematical, reading, and writing skills. COMPASS has high reliability, with minimum coefficients of 0.85, and has demonstrated strong predictive validity (ACT, 2004).

Outcome Data

The National Student Clearinghouse (NSC) is a non-profit organization that was established in 1993 by the higher education community. It is intended to provide enrollment, degree, diploma, and certificate records of U.S. students on behalf of the nation's colleges, universities, and secondary institutions. It was established as the principle repository of student records and serves to disseminate verification of students' academic records to employers, student service providers, insurance companies, credit issuers, the U.S. Department of Education, and other interested organizations. The NSC serves more than 3,000 academic institutions comprising 91% of college students in the United States (National Student Clearinghouse, 2007). For the purpose of this study, the NSC enrollment data were utilized to determine the beginning of year four enrollment outcomes. The NSC enrollment data was linked to institutional-level data from ACT's Institutional Data Questionnaire (IDQ) to determine the selectivity and control of each institution for which students were enrolled at the beginning of the 2006-2007 academic year.

Statistical Analyses

The data proposed in this study were analyzed in a variety of ways. First, background and demographic variables and the prior academic achievement of the sample used in this study will be reported using descriptive statistics including frequencies, means, and standard deviations. These initial analyses were conducted in order to better understand how the community college sample differed from the four-year sample with respect to these variables. It is important to identify key differences with

respect to these variables due to the fact that they may confound the outcomes of interest. These analyses informed which variables needed to be controlled for and how best to control for them.

Second, two-sample t-tests were conducted to quantify differences between the community college sample and the four-year sample in terms of continuous variables such as ACT scores, high school grade point average, family income, and psychosocial factors. Chi-square tests were conducted to quantify difference between the two groups on race, generational status, degree aspirations, and gender.

Research questions 1-5 were answered using hierarchical logistic regression analyses. Hierarchical logistic regression analyses were appropriate because the outcome variables were dichotomous and because students were nested within an initial institution. A series of hierarchical logistic regression analyses were performed using the following dichotomous outcomes (a) enrollment at a four-year institution at the beginning of the 2006-2007 academic year, (b) enrollment at a selective or highly selective four-year institution, and (c) enrollment at a private four-year institution.

Research questions 1 – 5 consider whether the effect of initial enrollment path (i.e., at a two-year versus four-year institution, which will be referred to as "*Group*" from here forward) on the odds of enrollment behavior three years later at; (a) a four-year institution, (b) a selective or highly selective four-year institution, or (c) a private four-year institution; depend on students' generational status, family income level, race, prior academic achievements, and/or psychosocial factors. A significant interaction effect indicates that the effect of initial enrollment path depends on the student characteristic. To answer research questions 1 – 5, three hierarchical logistic regression models were constructed (i.e., one for each outcome) with the intention of testing for the moderating effects of (a) Group x Race (Question 1), (b) Group x Generation Status (Question 2), (c) Group x Family Income (Question 3), (d) Group x Prior Academic Achievement (Question 4), and (e) Group x Psychosocial Factors (specifically the SRI scales of

Academic Discipline, Academic Self-Confidence, Communication Skills, Social Connection, Emotional Control, and Social Activity; Question 5), on the odds of enrollment behavior three years later. Moderations effects were determined after controlling for the main effects of prior academic achievement, psychosocial factors, plans and expectations for college, and background and demographic characteristics not included in the interaction terms of each model of interest.

For the purpose of this study, statistical significance was set at $\alpha = .05$ to ensure adequate power and due to the potential implications of making a Type-I error. To illustrate, making a Type-I error may have resulted in the false conclusion that the effect of initial community college enrollment on the odds of later college enrollment is significantly diminished for certain types of students, when in fact there may not have been a moderation effect. As the primary route to educational attainment for the disadvantaged, a Type-I error could result in inadvertently deterring disadvantaged individuals from entering higher education through the community college system.

CHAPTER FOUR: RESULTS

Excluded Participants

Missing Outcome Data

The original data used for analyses in the SRI national validity study included 14,464 participants. First, 535 participants were excluded from this study before imposing the inclusion criteria, which included 357 (2.5%) who were excluded due to providing an invalid identification number. The remaining 178 (1.2%) participants were all from a single four-year institution that does not participate in the National Student Clearinghouse. Consequently, there is no 2006-2007 enrollment outcome data available for these 535 participants.

Inclusion Criteria

For the purpose of this study, the inclusion criteria significantly reduced the number of participants. With the execution of the set inclusion criteria, the following numbers of participants were excluded from this study: (a) 2,719 were excluded due to age limitations, (b) 1,348 were excluded because they enrolled for reasons other than to attain a bachelor's degree or higher, (c) 429 were excluded because their enrollment status was part-time, and (d) 2,286 were not included due to missing data. Of those original participants with missing data, the variables which were missing included family income (n = 1,350), expected work hours while enrolled (n = 649), ACT/ACT concordant scores (n = 509), parent's education level (n = 141), expectations to receive financial aid (n = 61), race (n = 36), and high school grade point average (n = 11). Family income and parent's education level may have gone unreported due to the students' lack of knowledge in regard to their parent's levels on these variables. Expectations for college (i.e., work hours and financial aid) may have gone unreported due to participants' indecision in regard to these variables at the time of administering the Student Readiness Inventory (i.e., many students completed these measures during summer orientation programs). The variables of race, high school grade point average, and standardized test

scores may have gone unreported due to the personal, and perhaps sensitive, nature of these variables. It is important to note that several participants were missing data on multiple variables, hence the discrepancy between the total number excluded for missing data (i.e., n = 2,286) and the total sum of missing data points across all variables (i.e., 2,757).

Finally, part-time enrollment status was not originally included as an exclusionary criterion in the Methods section. However, due to the increased likelihood that community college students will attend in non-traditional enrollment patterns (i.e., part-time, delayed, and interrupted; Alfonso, 2006; Pascarella & Terenzini, 2005), it is believed that the effects of non-traditional patterns of enrollment can be better controlled for by excluding participants who delay enrollment (i.e., those who are older than 20 years) and enroll on a part-time basis. Taken together, these inclusion criteria should remove a significant number of students who follow non-traditional enrollment patterns. Therefore, the final sample consisted of 7,147 bachelor's degree aspirants, of whom 1,708 (24%) matriculated to a community college and 5,439 (76%) began their college careers in a four-year institution in the fall semester of 2003.

Community College Sample: Excluded versus Included Participants

Analyses were conducted to examine differences between the included and excluded community college samples to better understand how the inclusion criteria affected the representativeness of the sample. The intent of this study is to examine whether the effects of initial college enrollment location on later enrollment behavior at the four-year institutional level depend on student characteristics. Therefore, it is important to ensure that the inclusion criteria assisted in capturing two-year and four-year samples that were highly similar to one another, but differed primarily in where they entered higher education. First, the age inclusion criteria (i.e., 17-20 years old) was intended to minimize the impact of uncontrolled for variables associated with age, which

may produce significant effects and skew the results (e.g., financial independence, greater family and work obligations, and a greater likelihood of following non-traditional enrollment patterns). In addition, given the follow-up interval of three years post-matriculation, it was important to exclude individuals who initially enrolled on a part-time basis, as these students may not have accumulated enough credits to successfully transfer within the follow-up interval. Finally, it is counterintuitive to include individuals who meet all the inclusion criteria, but aspire to less than a four-year degree. Because they did not enroll with the intention of transferring, it is safe to assume that they would be highly unlikely to persist into the junior and senior years of college. Although these individuals may alter their degree plans and pursue a bachelor's degree, it is likely that their inclusion would further skew the outcome data. Thus, the initial community college sample was comprised of 6,150 participants, of which 1,708 (27.8%) community college students met inclusion criteria and 4,442 (72.2%) failed to meet inclusion criteria for this study. In the paragraphs that follow, the differences between community college matriculates who met inclusion criteria and those who failed to meet inclusion criteria are delineated.

Background and Demographic Variables

To begin, the included community college sample significantly differed from the excluded sample in terms of gender (see Table1). The included sample appeared to be equally representative of both males and females (49.2% and 50.8%, respectively), whereas a majority of the excluded community college students were female (58.5%).

Of the 5,935 community college students who reported their parents' education level, 1,572 (26.5%) were first-generation college students. The included sample significantly differed from the excluded sample in this regard and was comprised of significantly more first-generation students (35.4% versus 22.9%, respectively; see Table1). This difference indicates that a greater number of first-generation college students enroll at the community college level with the goal of earning at least a

bachelor's degree, than those who enroll for reasons other than to complete at least a bachelor's degree. This difference may not necessarily reflect a difference between the included and excluded groups, but rather a difference between the number of first-generation college students (with bachelor's degree aspirations or greater) who choose to enroll at a community college rather than a four-year institution. Thus, this difference may simply reflect and confirm previous findings that a greater number of first-generation college students (with at least bachelor's degree aspirations) initiate their education at the community college level rather than the four-year level (Pascarella & Terenzini, 2005). This suggests that at the outset, first-generation college students may believe that the community college is a viable location in which to commence their post-secondary education.

In regard to family income, 3,995 participants provided this information and the samples significantly differed on this variable (see Table1). The excluded sample appeared to consist of a greater percentage of students who fell in the lowest income bracket (i.e., less than $24,000; 28.8% vs. 16.5%, respectively). A greater percentage of the included sample came from families who earned between $50,001 and $100,000 than the excluded sample (40.2% vs. 30.0%, respectively). Both samples appeared to be roughly equally represented in the top two tiers of the income brackets (i.e., family income greater than $100,001; 9.9% in the included sample versus 7.8% in the excluded sample).

The family income differences noted at the lowest income level (i.e., less than $24,000), are consistent with the literature reviewed earlier concerning the effects of social class factors. For example, "lateral classism" (Liu et al., 2004), which includes behaviors intended to keep an individual within a given group, is a powerful factor that may prevent individuals from pursuing goals that lead to social mobility. Through alienation from their family of origin, for example, individuals may feel distressed; and therefore they may hold lower educational, occupational, or economical goals (cf. Liu et

al., 2004; Striplin, 1999). In this regard, the attainment of a secure job following high school graduation is considered the norm for individuals of low social class (Walpole, 2003). The pursuit of a bachelor's degree would be considered outside the norm for these students. Consequently, the disparity found here is consistent with the expectation of a greater number of students from lower social class backgrounds enrolling for reasons less than the pursuit of a bachelor's degree. The similarity noted among the middle and upper income brackets may suggest that fiscally conservative individuals may be attracted to the lower tuition costs associated with attending a community college for the first two years of college and the financial savings attributed to living at home and attending within one's local community (The College Board, 2004). Another possibility suggests that students of lower family income, who aspire to a bachelor's degree or greater, may follow non-traditional enrollment patterns due to an amalgam of factors (e.g., full-time employment, familial obligations), and may therefore be excluded due to part-time enrollment status rather than degree aspirations.

Finally, the two samples significantly differed in terms of race (see Table 1). The included sample appeared to be comprised of fewer minority students and a larger percentage of Caucasian students than the excluded sample as follows: Caucasian (84.6% vs. 65.0%, respectively), African American (9.8% vs. 23.4%, respectively), Hispanic/Latino (2.0% vs. 3.0%, respectively), American Indian/Alaskan Native (0.5% vs. 0.9%, respectively), Native Hawaiian/other Pacific Islander (0.1% vs. 0.6%, respectively), Asian American (2.0% vs. 2.1%, respectively), Other (.9% vs. 2.5%, respectively), and prefer not to respond (0.0% vs. 2.5%, respectively). Researchers have found that disadvantaged students (e.g., minority students), are more inclined to lack social capital than their more advantaged peers (Alford, 1998; Cohen & Brawer, 1996; Striplin, 1999; Tinto, 1993). Minority students may be more likely to come from backgrounds where the pursuit of higher education is not highly valued and where the availability of information and social contacts on how to move ahead educationally and

economically is limited (Alford, 1998; Bubolz, 2001; Cohen & Brawer, 1996; Littrell, 1999; Striplin, 1999; Walpole, 2003). In this regard, minority students may generally tend to hold lower educational goals and plans. Thus, they may have been excluded from the present study in greater numbers due to lower average degree aspirations, which fail to meet inclusion criteria (i.e., only students with bachelor's degree aspirations are included in the present study). Another explanation may be that minority students are more inclined to delay enrollment (i.e., enroll later in life) or to attend in less than full-time enrollment. Therefore, a greater number of minority students with bachelor's degree aspirations or greater may have been excluded due to non-traditional enrollment patterns.

Conversely, it may be that a greater number of Caucasian students who similarly lack social capital enroll at the community college level and over-endorse bachelor's degree aspirations. In this regard, they may come from low income families or other disadvantaged backgrounds and therefore lack the knowledge of the degree requirements needed to enter a given field (Alford, 1998; Bubolz, 2001; Cohen & Brawer, 1996; Littrell, 1999; Striplin, 1999; Walpole, 2003). Thus, we may see a disproportionate percentage of Caucasian students over-endorsing bachelor's degree aspirations due to the possibility that they do not fully appreciate what they are indicating when they endorse educational goals which include the bachelor's degree.

Plans and Expectations for College

In regard to plans and expectations for college, the two samples significantly differed in terms of their expectations for (a) the number of hours they plan to work per week while enrolled, (b) their plans to receive financial aid, (c) their degree aspirations, and (d) enrollment status (see Table 1). A greater percentage of the included sample indicated plans to work 20 or fewer hours per week than the excluded sample (74.9% vs. 56.2%, respectively). Conversely, a larger percentage of the excluded sample (versus the included sample) planned to work more than 20 hours per week (43.2% vs. 25.1%,

respectively). The excluded sample was more likely to receive financial aid (68.7% vs. 63.4%, respectively).

In regard to degree aspirations, the excluded sample included 11% who enrolled for a certificate program and 38.3% who enrolled to complete an associate's degree. The included sample was comprised of a greater percentage of students, than the excluded sample, who aspired to a bachelor's degree (66.3% vs. 35.4%, respectively), a master's degree (19.3% vs. 8.1%, respectively), and a doctoral or professional degree (14.4% vs. 7.2%, respectively). This difference is expected, provided that the included sample was comprised of students who acknowledged bachelor's degree aspirations at a minimum. Overall, 7.8% of the total community college sample was enrolled for the purpose of completing a certificate program; 27.3% sought an associate's degree; and the remaining students aspired to a bachelor's degree (44.3%), a master's degree (11.3%), or a doctoral or professional degree (9.3%). These numbers differ significantly from that reported by Horn and colleagues (2006) and may represent a difference in sampling procedures between the studies, as the current study is a smaller and non-random sample of community college students. Finally, 28.2% of the excluded sample was enrolled as a part-time student for the fall semester of 2003.

Because the excluded sample is comprised of older students and those who enroll in non-traditional patterns, the difference noted in many of the plans and expectations for college variables (i.e., work hours, financial aid) may be explained by the fact that community college students (and particularly older community college students) face an amalgam of concerns including commuting, single parenthood, family obligations, lower family social class, financial independence, and child care concerns (Cabrera et al., 2006; Horn et al., 2006; Lanni, 1997; Tinto et al., 1994).

Prior Academic Achievement

Statistically significant differences were noted between the included and excluded community college samples in terms of their self-reported high school grade point

averages and ACT scores/ACT concordant scores (see Table 2). The included sample reported a mean high school academic performance (M = 2.92, SD = 0.61) that was 0.52 standard deviation units higher than the excluded sample (M = 2.59, SD = 0.66). Similarly, the included sample reported a mean performance on standardized tests (M = 19.35, SD = 3.90) that was 0.46 standard deviation units higher in relation to the excluded sample (M = 17.60, SD = 3.69). This difference is intuitively consistent with the fact that the included sample was comprised of individuals who aspired to at least a bachelor's degree. In this regard, it is more likely that students who hold higher degree aspirations are more prone to have experienced greater prior academic achievements.

Psychosocial and Study Skill Factors

Finally, a series of two sample t-tests with assumed equal variances were used to determine whether there were statistically significant differences between the included and excluded community college matriculates on self-reported perceptions of academically important psychosocial and study skill variables. Statistically significant differences were found between the two groups on all of the scales of the Student Readiness Inventory except for Social Activity (see Table 3). Interestingly, the excluded community college sample reported significantly higher means on self-perceptions of psychosocial and study skill factors, as indicated by the standard deviation unit differences on the following scales: Study Skills (0.41), General Determination (0.26), Goal Striving (0.25), Emotional Control (0.22), Academic Discipline (0.21), Communication Skills (0.13), Academic Self-Confidence (0.11), and Commitment to College (0.10). These results are likely attributable to the age differences noted between the included and excluded samples. In this regard, older individuals have likely matured since late-adolescence and may be more academically, economically, and socially motivated when they return to academia after a period of time away from their educational pursuits. This change may be ascribed to self-reflection; overt personal efforts to change poor academic attitudes and habits; a greater motivation to excel within

their chosen profession; and/or a broader understanding of the realistic consequences of failing to do well academically (e.g., they may fail to be promoted within their field or their family may experience economic hardship or continued hardship should they fail). On the other hand, the included community college sample's mean score on Social Connection was 0.40 standard deviation units higher than the excluded sample. Again, this may be an age-related difference. As Townsend and Wilson (2006) noted in their qualitative study, non-traditional aged students cited differences in age and a greater likelihood of non-academic obligations (e.g., work, family) as barriers to social integration at a four-year institution. This difference suggests that older students may perceive themselves as less connected to, and involved with, their respective community colleges. No statistically significant differences were noted between the included and excluded community college sample in terms of their self-reported level of Social Activity.

Differences Between the Included Community College and Four-year Samples

Background and Demographic Variables

The included community college sample differed from the four-year sample on a multitude of variables. In terms of background and demographic variables, there was a statistically significant difference between the *groups* (i.e., again, included community college vs. four-year institution matriculates) on gender, generation status, family income, and race (see Table 4). The four-year sample consisted of significantly more females than the community college sample (55.5% vs. 50.8%, respectively).

The four-year sample was comprised of significantly fewer first-generation college students (50.3% vs. 64.6%) than the community college sample (see Table 4). This difference is consistent with the earlier conclusion, which was drawn from the difference noted between the included and excluded community college samples on this variable. That is, first-generation college students, who aspire to the bachelor's degree,

may be more inclined to enroll at the community college level. Additionally, as discussed earlier, it may reflect a lack of understanding in terms of the type of degree required to enter a given field (i.e., two-year versus four-year) between first-generation students who begin at a community college and those who start at a four-year institution. In this regard, first-generation students at the community college level may over-endorse bachelor's degree aspirations due to a lack of knowledge concerning how to move ahead educationally and occupationally.

In terms of family income, there was a statistically significant difference between the groups, such that the four-year sample appears to be comprised of (a) a larger percentage of students who report coming from families with incomes greater than $150,000 (5.4% vs. 3.0%, respectively) and between $75,001 and $150,000 (24.4% vs. 20.5%, respectively); and (b) a smaller percentage of students who report coming from families with incomes between $24,001 and $75,000 (53.2% vs. 60.0%, respectively) and family incomes less than $24,000 (16.5% vs. 17.0%, respectively). As expected, the differences discussed here are consistent with the existing literature, which indicates that first-generation students and students from lower family social class are more likely to initiate their college career at the community college level (Cabrera et al., 2005; Cohen & Brawer, 1989, 1996; Dougherty, 1987, 1992; Lea et al., 1979; McCool, 1984; McDonough, 1997; Pascarella & Terenzini, 1991; 2005).

In regard to race, the community colleges were comprised of significantly more Caucasian students (84.6% vs. 69.6%, respectively; see Table 4). The greatest differences in enrollment path among minority students, who were represented in larger percentages at four-year institutions, occurred among African American (19.9% vs. 9.9%, respectively) and Hispanic/Latino (6.6% vs. 2.0%, respectively) students. This difference runs contrary to that which was expected, given the current literature (Cabrera et al., 2005; Cohen & Brawer, 1989, 1996; Dougherty, 1987, 1992; Lea et al., 1979; McCool, 1984; McDonough, 1997; Pascarella & Terenzini, 1991; 2005). However, this difference

may be due to a few possible factors. It may be due to the exclusion of a significant number of minority students in the community college sample because they aspired to less than a bachelor's degree. It may be due to a greater number of minorities following non-traditional enrollment paths or delaying their enrollment. Thus, they would have been excluded due to age limitations or endorsing part-time enrollment. Or, as reviewed earlier, a greater number of disadvantaged Caucasian students may initiate their education at the two-year level and erroneously endorse bachelor's degree aspirations due to a lack of social capital.

Plans and Expectations for College

In regard to students' plans and expectations for college, there were statistically significant differences between the groups in terms of their degree aspirations, receipt of financial aid, and the number of hours they intend to work per week while enrolled in college (see Table 4). The results indicate that the four-year sample consisted of a greater percentage of student's with degree aspirations beyond the bachelor's degree. A larger percentage of the four-year sample aspired to either a Master's degree (31.6% vs. 19.3%, respectively) or a doctorate or professional degree (25.8% vs. 14.4%, respectively). Contrastingly, a significantly larger percentage of the community college sample aspired to the bachelor's degree (66.3% vs. 42.6%, respectively). This difference is intuitive and expected. The average pre-college degree aspirations of the student-body at a four-year institution are expected to be higher than that which is found at the community college level. Thus, it is intuitive that the four-year institutions would be comprised of a significantly larger proportion of individuals who aspire to greater than a bachelor's degree. Additionally, four-year students generally have greater prior academic achievements and tend to come from relatively more privileged backgrounds. Thus, they may have a greater appreciation of and knowledge for (i.e., social capital) the educational requirements needed to attain a certain occupation.

In regard to financial aid, the community college sample included a greater percentage of students who did not plan to receive financial aid than the four-year sample (23.2% vs. 18.1%, respectively). In addition, there was a greater percentage of the community college sample that remained undecided in regard to whether they planned to receive financial aid (13.4% vs. 6.5%, respectively). Last, the four-year sample was comprised of a greater percentage of students' who intended to receive financial aid (75.4% vs. 63.4% respectively). This finding may reflect the increasing costs of four-year institutions and the inability of four-year matriculates to pay for college at the outset. In addition, it may also be a sign of the affordability of community colleges and thus, a lack of desire among community college students to incur educational debt, if avoidable (i.e., to pay for college as they progress). Or, this finding may be associated with merit scholarships at the four-year level, which are intended to assist college students who demonstrate greater prior academic achievement.

Finally, in terms of the number of hours students intend to work while enrolled in college, the results demonstrate that a majority of the community college sample planned on working 16-20 hours per week (26.6%), followed by those who intended to work greater than 20 hours per week (25.2%), and then those who planned to work 11-15 hours per week (20.8%). In contrast, the majority of four-year students planned to work between one and five hours per week (30.4%), followed by those who intended to work 11-15 hours per week (21.5%), and then those who planned to work 16-20 hours per week (19.6%). In comparing the percentages of students from both groups who indicated intentions to work less than 10 hours per week, 26.6% of the community college sample expressed these plans compared to 47.4% of the four-year sample. In regard to those students who expressed a desire to work more hours, 52.7% of the community college sample endorsed plans to work 16 or more hours per week while enrolled compared to 30.8% of the four-year sample. The differences in expectations to work more hours may be the result of a variety of factors. Previously noted differences among the groups may

help explain the divergence in work-related plans between the groups. For example, community college students may have a greater need for an independent source of income due to lower family social class (e.g., they may receive less family financial support), differences in plans to receive financial aid (e.g., students may plan to pay for college upfront, given the affordability of community colleges; The College Board, 2004), or greater non-academic obligations (e.g., commuting, single parenthood, child care; Cabrera et al., 2006; Horn et al., 2006; Lanni, 1997; Tinto et al., 1994).

Prior Academic Achievement

Statistically significant differences were noted between the community college and four-year sample in terms of their self-reported high school grade point averages and ACT scores/ACT concordant scores (see Table 5). The community college sample reported a mean high school grade point average that was 0.66 standard deviation units lower than the four-year sample. Similarly, the community college sample reported a mean performance on standardized test scores which was 0.56 standard deviation units lower in relation to the four-year sample. This difference is expected, provided that community colleges possess open admissions policies and often feature remedial education programs, which offer students of lower measured academic ability a second chance to enter postsecondary education (AACC, 2008; Cohen & Brawer, 1996; Grubb, 1991; Hilmer, 1997; Karabel & Astin, 1975; Pascarella & Terenzini, 2005). The differences noted here in prior academic performance also lend support to the suggestion that merit scholarships may help explain some of the earlier differences in terms of students' intentions concerning the receipt of financial aid (i.e., four-year students may be more inclined to accept financial aid because they are more likely to receive a merit scholarship as part of their financial aid package).

Psychosocial and Study Skill Factors

Finally, a series of two sample t-tests with assumed equal variances were employed to determine whether there were statistically significant differences between

the groups on self-reported perceptions of academically important psychosocial and study skill variables. Statistically significant differences were found between the two groups on multiple scales of the Student Readiness Inventory (see Table 6). First, the community college sample reported significantly lower means on self-perceptions of several psychosocial and study skill factors, as indicated by the standard deviation unit differences on the following scales: Academic Self-Confidence (0.24); Academic Discipline (0.14); Social Connection (0.08); Study Skills (0.06); and Goal Striving (0.06). These findings are anticipated, given the lower prior academic achievement cited earlier among the community college sample. For example, it is intuitive that entering community college students would generally perceive themselves as less confident in their ability to perform academic tasks, due to a prior lower mean academic performance and because they are entering into an academic environment that they may perceive as more academically rigorous than high school. Further, community college students may anticipate lower levels of involvement and connection to the student body due to a greater likelihood of living at home, plans to work more hours, commuting, and/or plans to transfer relative to the residential student body common to most four-year institutions (cf. Cabrera et al., 2006; Horn et al., 2006; Lanni, 1997; Tinto et al., 1994).

Conversely, as indicated by the following standard deviation unit differences, the community college sample reported significantly higher means on self-perceptions of Social Activity (0.10), Emotional Control (0.11), and Communication Skills (0.05). No statistically significant differences were noted between the community college sample and the four-year sample on scales measuring General Determination and Commitment to College.

Given the multiple statistically significant differences noted between the community college sample and the four-year sample on key background and demographic variables, plans and expectations for college, prior academic achievements, and psychosocial and study skill factors; these differences were controlled for in the

hierarchical logistic regression analyses used to answer the five research questions posed in this study.

Enrollment Outcomes Three Years Later

Hierarchical logistic regression models were used to examine whether student characteristics moderate the relationship between the groups' enrollment outcomes three years later. A hierarchical logistic regression model is appropriate due to the binary outcome variables (i.e., enrolled vs. not enrolled) and because students are nested within entering institutions (i.e., the postsecondary institution at which they first enrolled for the fall semester in 2003). In this regard, it is prudent to consider the effect of students' entering academic institutions. Students were drawn from one of 47 entering institutions that volunteered to participate in the SRI national validity study (Robbins et al., 2006). It is likely that students' entering institutions produce an effect on later enrollment outcomes (e.g., Pascarella et al., 2003). Therefore, to begin to account for this effect, the regression models' intercepts are allowed to vary by entering institution. In the model, this is accomplished by specifying the institution-specific intercepts as random effects. Institution type (i.e., two-year vs. four-year) was used as a level two predictor variable of the mean intercept across entering institutions. The hierarchical regression models were fit using the SAS GLIMMIX macro, which uses iteratively reweighted likelihoods to fit the generalized linear mixed model (Wolfinger & O'Connell, 1993).

Three hierarchical logistic regression models were used to estimate whether the odds of being enrolled three-years later at (a) a four-year degree granting institution (see Table 8), (b) a selective or highly selective four-year degree granting institution (see Table 9), and (c) a private four-year degree granting institution (see Table 10) for two-year and four-year matriculates depended on student characteristics.

Again, 1,708 community college matriculates and 5,439 four-year institution matriculates met inclusion criteria for this study. At the beginning of the 2006-2007 academic year, 33% (n = 544) community college matriculates were enrolled at a four-

year institution. Of the 544 community college matriculates still enrolled, 21% (n = 114) were enrolled at a selective or highly selective four-year institution and 39% (n = 211) were enrolled at a private four-year institution three years after beginning their college careers. Conversely, 69% (n = 3,759) of the four-year matriculates were enrolled at a four-year institution at the beginning of the 2006-2007 academic year. Of the 3,759 four-year matriculates still enrolled, 12.4% (n = 467) were enrolled at selective and highly selective four-year institutions. Approximately 30% (n = 1,127) of the 3,759 four-year matriculates were enrolled at private four-year institutions three years later. Clearly, we see enrollment outcome differences between the community college and four-year matriculates. It is unclear, however, whether these differences are moderated by student characteristics. The results of the moderation models are provided in the sections that follow.

Race as a Moderator of Enrollment Outcomes

Question 1 asked whether the effect of initial enrollment on the odds of later enrollment outcomes was moderated by students' race. The results suggest that the relationship between initial community college enrollment and persistence into a four-year institution three years post-matriculation is not moderated by race $F_{(3, 7069)} = 0.03$, $p = 0.992$ (see Table 7). Thus, these results suggest that the effect of initial enrollment location on the odds of enrolling at a four-year institution is not moderated by the race of students (Question 1a).

In regard to whether race moderates the effect of initial community college enrollment on the odds of enrolling at a selective or highly selective four-year institution, the overall test of moderation is not significant $F_{(3, 7069)} = .79$, $p = 0.500$ (see Table 7). Thus, the results fail to support a significant interaction for African Americans, Caucasians, Hispanic/Latino, or other minority student groups (Question 1b). Finally, the model failed to support race as a moderator of the relationship between group and the

odds of enrolling in a private four-year degree granting institution three years later $F_{(3, 7069)} = 2.40$, $p = 0.066$ (Question 1c).

In sum, there is no evidence to suggest that the effect of race varies by initial enrollment location. A student's race appears to affect the odds of later enrollment outcomes similarly for students who matriculate to either a community college or a four-year institution. In other words, the findings suggest that after accounting for the main effect associated with initial community college enrollment and other predictor variables, the effects of students' race similarly impacts all students' odds of later enrollment outcomes (at a four-year institution, a private four-year institution, and/or a selective or highly selective four-year institution), whether they matriculate to a community college or a four-year institution.

First-Generation Status as a Moderator of Enrollment Outcomes

Question 2 and its subcomponents ask whether the effect of matriculating to a community college on the odds of enrollment outcomes three years later is moderated by a student's status as a first-generation college student. The results suggest that first-generation status does not significantly moderate the odds of enrolling at a four-year institution regardless of entry point $F_{(1, 7069)} = 2.43$, $p = 0.119$ (Question 2a). Likewise, the effect of group on the odds of enrolling at a selective or highly selective four-year institution three years later do not appear to be moderated by first-generation status $F_{(1, 7069)} = 1.15$, $p = 0.284$ (Question 2b). Finally, the effect of enrollment location on the odds of enrolling at a private institution three years later does not appear to be moderated by being a first-generation college student $F_{(1, 7069)} = 3.67$, $p = 0.055$ (Question 2c).

Similar to race, there is no evidence to support that the effect of a student's generation status varies by initial enrollment location. Therefore, the odds of later enrollment outcomes are similarly affected by students' generational status regardless of whether they matriculate to a community college or a four-year institution. To state it

another way, the findings suggest that after controlling for the predictor variables and the effect associated with initial enrollment location, the effect of being a first-generation college student similarly impacts both community college matriculates' and four-year matriculates' odds of later enrollment outcomes at a four-year institution, a private four-year institution, and a selective or highly selective four-year institution.

Family Income as a Moderator of Enrollment Outcomes

The third question addressed in this study asked whether the effect of initial enrollment location on student's enrollment outcomes three years later was moderated by family social class, as measured by self-reported family income levels. The results indicate that family income does not moderate the odds of enrolling at a four-year institution three years after entering higher education $F_{(1, 7069)} = 3.00$, $p = 0.084$ (Question 3a). Further, the results fail to support family income as a moderator of the effect of group on the odds of enrollment behavior in selective or highly selective four year institutions $F_{(1, 7069)} = 0.68$, $p = 0.411$ (Question 3b). Finally, the results indicate that the effect of beginning one's academic career in a community college on the odds of being enrolled at a private four-year institution does not depend on family income $F_{(1, 7069)} = 1.29$, $p = 0.257$ (Question 3c).

Thus, the weight of the evidence suggests that the effect of family income does not vary by group. A student's family income appears to affect the odds of later enrollment outcomes comparably for student's who matriculate to community colleges or four-year institutions. To illustrate, after controlling for the effects associated with initial community college enrollment and other predictors, the effect of students' family income similarly affects all students' odds of later enrollment outcomes; whether they choose to begin their college education at a community college or at a four-year institution.

Prior Academic Achievement as a Moderator of Enrollment Outcomes

The fourth question asked whether the effect of initial enrollment location on the odds of later enrollment outcomes was moderated by prior academic achievement. The moderating effects of prior academic achievement on the outcomes of interest were estimated using two predictor variables, high school grade point average (HSGPA) and ACT/ACT concordant scores. The results indicate that HSGPA does not significantly moderate the effect of initial community college enrollment on enrollment behavior three years later, including enrollment at (a) a four-year institution $F_{(1,7069)} = 0.16$, $p = 0.691$ (Question 4a), (b) a selective or highly selective four-year institution $F_{(1, 7069)} = 1.21$, $p = 0.271$ (Question 4b), and (c) a private four-year institution $F_{(1, 7069)} = 0.06$, $p = 0.810$ (Question 4c). Further, the results indicate that the effects of initially enrolling at a community college on the odds of being enrolled at a four-year institution (Question 4a) and at a private four-year institution (Question 4c) three-years post-matriculation are not moderated by ACT/ACT concordant scores ($F_{(1, 7069)} = 0.09$, $p = 0.762$ and $F_{(1, 7069)} = 3.38$, $p = 0.066$; respectively).

However, the results suggest that the effect of initial enrollment location on the odds of being enrolled at a selective or highly selective four-year institution three years later depend upon students' prior academic achievement as measured by ACT/ACT concordant scores $F_{(1, 7069)} = 6.70$, $p = 0.010$ (Question 4b). Because selective and highly selective four-year enrollment was modeled using hierarchical logistic regression, the interpretation of the regression coefficients is the log-odds of a community college student enrolling at a selective or highly selective institution (three-years later) increases by 0.106 units for each standard-deviation increase ACT/ACT concordant scores, while the log-odds for a four-year matriculate (with a similar ACT/ACT concordant score) increases by 0.024 units. This result suggests that the impact of pre-collegiate academic preparation, as measured by standardized test scores, on later enrollment at a selective or

highly-selective four-year institution is greater for two-year matriculates relative to four-year matriculates. Stated another way, for each standard deviation increase in ACT/ACT concordant score, students who matriculate to community colleges experience an increase in the odds of enrolling at a selective or highly selective four-year institution three years later by a factor of 1.11, while matriculates to four-year institutions realize an increase in their odds by a factor of 1.02. Again, these results suggest that the effect of pre-collegiate academic preparation (as measured by standardized test scores) on later enrollment at selective or highly-selective four-year institution is greater for two-year matriculates relative to their four-year counterparts.

To summarize, the evidence suggests, with one exception, that the effect of prior academic achievement does not vary by initial enrollment location. The odds of later enrollment outcomes (at a four-year institution, a selective/highly selective four-year institution, and/or a private four-year institution) are equally affected by a student's high school grade point average, whether they enroll at a community college or at a four-year institution. Similarly, there is no evidence to suggest that the effect of standardized test scores on later enrollment behavior (at a four-year institution and a private four-year institution) varies by initial enrollment location. A student's standardized test score appears to affect the odds of later enrollment at a four-year institution and at a private four-year institution similarly for students who matriculate to either a community college or a four-year institution. The exception to these findings concerns the effect of standardized test scores on later enrollment behavior at a selective or highly selective four-year institution. In this instance, the results suggest that effect of standardized test scores varies by initial enrollment location. Consequently, the effect of a student's standardized test score on his/her odds of later enrollment at a selective or highly selective four-year institution appears to be greater if that student matriculates to a community college rather than a four-year institution.

Psychosocial Factors as Moderators of Enrollment Outcomes

Finally, the remaining question examined whether key psychosocial factors (i.e., Academic Discipline, Academic Self-Confidence, Communication Skills, Social Connection, Emotional Control, and Social Activity), as measured by the Student Readiness Inventory (Robbins et al., 2006), moderated the effect of initial enrollment location on later enrollment behaviors. The models indicated that the effect of beginning one's college career at the community college level on the odds of enrolling at a four-year institution (Question 5a) was not moderated by Academic Discipline $F_{(1, 7069)} = 1.07$, $p = 0.301$; Academic Self-Confidence $F_{(1, 7069)} = 0.02$, $p = 0.900$; Communication Skills $F_{(1, 7069)} = 0.27$, $p = 0.602$; Social Connection $F_{(1, 7069)} = 0.44$, $p = 0.505$; Emotional Control $F_{(1, 7069)} = 0.31$, $p = 0.579$; or Social Activity $F_{(1, 7069)} = 3.36$, $p = 0.067$.

In regard to Question 5b, which asked whether the effect of initial community college enrollment on the odds of being enrolled at a selective or highly selective four-year institution three years later depended on psychosocial factors, the results failed to support psychosocial factors as a significant moderator. Specifically, the results provided no evidence to conclude that the effect of psychosocial factors on the odds of later enrollment behavior vary by group: Academic Discipline $F_{(1, 7069)} = 1.01$, $p = 0.315$; Academic Self-Confidence $F_{(1, 7069)} = 0.50$, $p = 0.478$; Communication Skills $F_{(1, 7069)} = 0.01$, $p = 0.935$; Social Connection $F_{(1, 7069)} = 0.31$, $p = 0.580$; Emotional Control $F_{(1, 7069)} = 0.03$, $p = 0.864$; or Social Activity $F_{(1, 7069)} = 3.57$, $p = 0.059$.

Finally, the results suggest that the effect of beginning one's postsecondary education at the community college level on the odds of being enrolled at a private four-year institution three years post-matriculation does not depend on psychosocial factors (Question 5c). More specifically, the psychosocial factors of Academic Discipline $F_{(1, 7069)} = 0.52$, $p = 0.471$; Academic Self-Confidence $F_{(1, 7069)} = 2.89$, $p = 0.089$; Communication Skills $F_{(1, 7069)} = 0.17$, $p = 0.677$; Social Connection $F_{(1, 7069)} = 0.02$, $p =$

0.880; Emotional Control $F_{(1, 7069)} = 0.54$, $p = 0.463$; or Social Activity $F_{(1, 7069)} = 0.01$, $p = 0.930$ are not significant moderators of the effect of initially enrolling at a community college on the odds of private four-year institution enrollment three years after initiating one's postsecondary education.

The evidence suggests that the effect of students' self-reported psychosocial factors on the odds of later enrollment behavior does not vary by initial enrollment location. Thus, students' self-reported level of psychosocial factors appears to impact the odds of enrollment at a four-year institution, a selective/highly selective four-year institution, and a private four-year institution similarly; regardless of where they begin their college education. For example, the effect of high levels of Academic Discipline on the odds of later enrollment behavior is analogous, whether students initially enroll at a community college or a four-year institution.

In conclusion, with only one exception, the results of this study indicate that the effect of initial enrollment location on enrollment outcomes three years later is not moderated by student characteristics. The one exception to this broad conclusion suggests that, with each increase in standardized test scores, students' odds of later enrollment at a selective or highly selective four-year institution appear to be greater if they matriculate at a community college. Thus, the evidence suggests that although there is a negative main effect associated with initial enrollment location, there is nothing unique to the community college setting which exacerbates the risk of attrition associated with certain student characteristics. All students face an amalgam of barriers to their postsecondary educational attainment, regardless of where they initiate their educational pursuits. The implications of these findings for students, vocational psychologists, as well as academic institutions and educational policy are discussed in Chapter Five.

CHAPTER FIVE: DISCUSSION

Review

As previously discussed, the American community college system exists for four broad reasons (AACC, 2008), of which making available postsecondary education for all people (i.e., the open admissions policy) and the transfer mission are most germane to the current study. In general, community colleges are highly effective in providing open access and entry into postsecondary education, particularly for disadvantaged groups. However, much controversy exists over the effectiveness of the transfer mission of community colleges, with many claiming that disadvantaged individuals are disproportionately diverted from educational attainments as a result of enrolling in these institutions.

This study was intended to provide further clarification regarding the controversy concerning the role of community colleges in the educational attainment and social mobility process. Specifically, this study sought to determine whether the effect of community college matriculation on the odds of later enrollment behavior is moderated by being a disadvantaged student. To further examine the current controversy, this study employed the use of a two-group design, which included a large diverse sample of both four-year and two-year matriculates who sought to earn a bachelor's degree or greater. A number of inclusion criteria were set so as to better isolate the effect of initial enrollment location on students' enrollment status three years later. In addition, the effects of a number of predictor variables were controlled for including initial enrollment location, background and demographic variables, prior academic performance, plans and expectations for college, and psychosocial factors. To test the moderation models, hierarchical logistic regression analysis was used, which allowed for an examination of whether student characteristics moderate the effect of initial enrollment location on the odds of three binary outcomes (i.e., later enrollment at a four-year institution, a selective or highly selective four-year institution, and a private four-year institution) believed to be

related to greater educational attainment and social mobility. To date, limited research has asked whether all students experience a similar effect on their odds of later enrollment outcomes or whether specific types of students (i.e., disadvantaged students) experience an even greater effect. Thus, this study provides preliminary evidence suggesting that community colleges do not appear to exacerbate the risk associated with being a disadvantaged student.

A discussion of this study's results, in light of the current debate and existing literature, is provided in the sections that follow. Specifically, the sections that follow include a discussion of the specific enrollment outcomes, general conclusions, implications for affected groups, contributions to the literature, limitations, and future directions.

Enrollment Outcomes

Four-year Institution Enrollment

In regard to enrollment at a four-year institution, the results suggest that the effect of initial community college enrollment on students' social mobility, via continued persistence and transfer into the upper echelons of higher education, does not depend on student characteristics. That is, after controlling for the effects of initial enrollment location and other predictor variables, the odds of being enrolled at a four-year institution three-years post-matriculation did not depend on a student's race, generational status, family income, prior academic achievements, or self-reported levels of academically important psychosocial factors. The reasons for this remain unclear, but may be related to the first two roles of community colleges, as identified by the AACC (2008). Specifically, community colleges were intended to provide *all people* (italics added for emphasis) with open access to higher education and thus, to inherently prepare *all people* (who seek a bachelor's degree) for transfer into four-year institutions. In this regard, the reason for these outcomes may be primarily centered in the effort put forth by community colleges to indiscriminately provide the best education available to *all people*; regardless

of their ability, personality, inherited privilege, or background factors. Therefore, based on the results of this study, it appears that *all people* who commence their educational pursuits in community colleges are afforded a similar path to educational attainment and social mobility, net of the idiosyncratic risk and protective factors associated with each student and each institution. A discussion of the findings in light of existing research is provided below for each student characteristic.

Race

Previous research was mixed and provided little clarity concerning whether race significantly moderated the effect of initial community college enrollment on later enrollment behavior at a four-year institution. The results of the current study extend previous findings and fail to support race as a significant moderator of enrollment outcomes (Clagett, 1996; Crook & Lavin, 1989; Lee et al., 1993; Swanson, 2002; Tharp, 1998; Windham, 1995). To illustrate, the odds of being enrolled at a four-year institution were lower for students who entered higher education at a community college rather than a four-year institution. However, the effect of a student's race appears to similarly affect his/her odds of being enrolled three years later at a four-year institution, regardless of where (i.e., at a community college or a four-year institution) he/she entered the postsecondary education system. The findings fail to support earlier claims which suggested that community colleges may increasingly divert disadvantaged groups (i.e., in this case racial minorities) from educational attainment (Brint & Karabel, 1989; Dougherty, 1987, 1992, 1994; Karabel, 1972; Monk-Turner, 1988, 1990). Instead, the findings suggest that after controlling for other predictor variables and the effect associated with matriculating to a community college, the risk associated with one's race does not appear to be further exacerbated by attending a community college rather than a four-year institution.

Generation Status

The literature consistently indicates first-generation status is negatively related to the odds of educational attainment (Nunez & Cuccaro-Alamin, 1998; Pascarella & Terenzini, 2005). However, no previous literature has examined whether first-generation status moderates the effect of initial enrollment location on later enrollment outcomes. The results of this study suggest that although a negative effect is associated with initial community college enrollment, a student's generational status does not appear to incur additional negative consequences on his/her odds of later enrollment at a four-year institution if the student chooses to first attend a community college rather than a four-year institution. This finding suggests that community colleges similarly support, prepare, and assist first-generation college students for transfer into the upper echelons of higher education, relative to four-year institutions. This finding is important given the fact that a majority of first-generation college students matriculate to a community college (Horn et al., 2006).

Family Income

In regard to family income, previous research tends to suggest that students from lower family income are more likely to begin their postsecondary education at a community college (Cabrera et al., 2005; Cohen & Brawer, 1989, 1996; Dougherty, 1987, 1992; Lea et al., 1979; McCool, 1984; McDonough, 1997; Pascarella & Terenzini, 1991, 2005). In addition, these students are significantly less likely to transfer to and graduate from a four-year institution than their more affluent counterparts (Cabrera et al., 2005). The results of the current study extend these findings by examining whether family income moderates the effect of initial community college enrollment on the odds of later enrollment at a four-year institution. After controlling for the negative main effect associated with matriculating to a community college, the results suggest that the effect of family income similarly influences students' odds of being enrolled at a four-year

institution three years later, regardless of whether students matriculate to a community college or a four-year institution.

This finding is important in two ways. First, given that a majority of low income students initiate their education at the community college (Horn et al., 2006), this finding indicates that they do not incur additional risk of attrition associated with their family income. Second, due to the fact that a minority of low income students matriculate to four-year institutions, it is reasonable to assume that these students may experience feelings of alienation or isolation due to their social class standing (i.e., downward classism, Lui et al., 2004). These subjective feelings may negatively affect persistence. However, the current results suggest that low income students who begin in a four-year institution incur no additional risk associated with their social class. Thus, the extra expense associated with higher tuition for the first two years of college may be worth their investment, given the protective effects associated with four-year institutional enrollment.

Prior Academic Achievement

In regard to prior academic achievement, the results again suggest that the initial effect of matriculating to a community college on later enrollment at a four-year institution is not modified by students' prior academic achievement. Existing research consistently suggests a linear relationship between prior academic achievement and postsecondary educational outcomes (e.g., academic performance, persistence, and graduation; ACT, 1997; Bejar & Blew, 1981; Robbins et al., 2004; Robbins et al., 2006; Willingham, 1985; Willingham, Lewis, Morgan, & Ramist, 1990). Given this relationship, students of lower prior academic achievement realize decreased odds of academic performance and persistence into the upper echelons of higher education. Conversely, students of higher prior academic achievement benefit from increased odds of academic performance and persistence in higher education. In the context of the current study, it was expected that as prior academic achievements increase, students'

odds of enrollment at a four-year institution also increase. The results of this study suggest that although the odds of enrollment at a four-year institution three years later are lower for community college matriculates than for four-year matriculates, the effect of matriculating to a community college on later enrollment behavior does not depend on students' prior academic achievement. In other words, after controlling for the effects of initial enrollment location and other predictors, the effect of one's high school grades (and/or standardized test scores) appears to have a comparable impact on a student's odds of being enrolled at a four-year institution three years after beginning his/her college career, whether the student started at a community college or a four-year institution.

Psychosocial Factors

Finally, in regard to psychosocial and study skill factors, no literature was identified which examined the moderating effect of self-perceptions of academically relevant psychosocial factors on the relationship between initial enrollment location and later enrollment behavior. Previous research suggests that psychosocial and study skill factors are important predictors of academic outcomes among community college students. In this regard, students are more likely to remain enrolled in higher education if they (a) are more academically and socially integrated (Halpin, 1990; Hawley & Harris, 2005-2006; Mutter, 1992; Napoli & Wortman, 1996, 1998; Pascarella et al., 1986; Robbins et al., 2006), (b) are comfortable meeting new people and tend to be more connected to and involved with the campus community (Halpin, 1990; Mutter, 1992; Napoli & Wortman, 1996, 1998; Pascarella et al., 1986; Robbins et al., 2006), (c) report higher levels of goal and institutional commitment (Halpin, 1990; Mutter, 1992; Napoli & Wortman, 1998; Pascarella et al., 1986; Robbins et al., 2006; Voorhees & Zhou, 2000), and (d) are inclined to be hardworking, conscientious, and emotionally stable (Hawley & Harris, 2005-2006; Napoli & Wortman, 1998; Robbins et al., 2006).

The results of this study suggest that many psychosocial and study skill factors were important main predictors of later enrollment at a four-year institution. However,

the results indicate that key psychosocial and study skill factors do not moderate the relationship between initial enrollment location and later enrollment at a four-year institution. Thus, for example, after controlling for the main effects of initial enrollment location and other predictors, the effects of high academic discipline (i.e., seeing oneself as extremely hardworking and highly conscientious) appear to similarly affect the odds of being enrolled at a four-year institution three-years later for both community college and four-year institution matriculates. This finding is intuitive; one would expect that the protective effects of high academic discipline would be ubiquitous.

Selective or Highly Selective Four-year Institution Enrollment

With one notable exception, the evidence suggests that student characteristics do not moderate the path to upward social mobility via enrollment at a selective or highly selective four-year institution. After controlling for the effects of initial enrollment location and other predictors, the odds of being enrolled at a selective or highly selective four-year institution three years post-matriculation were similar for community college and four-year matriculates regardless of students' race, generational status, family income, high school grade point average, and self-reported levels of academically important psychosocial factors.

The only significant test of moderation concerned students' standardized test scores. In this regard, after controlling for the main effect of initial enrollment location and other predictor variables, the effects of standardized test scores moderated students' odds of being enrolled at a selective or highly selective four-year institution three years post-matriculation. In particular, the effect of standardized test scores appears to significantly increase the odds of being enrolled at a selective or highly selective four-year institution for students who initially matriculated to a community college. This finding suggests that the path to social mobility, via enrollment at a selective or highly selective four-year institution, is more likely for students with higher standardized test

scores; and that this gradient is more pronounced for students who begin their postsecondary education at a community college.

The present study fails to support Hilmer's (1997) earlier findings, which suggest that family income and high school grades moderate the effect of initial enrollment location on the odds of enrolling at a selective or highly selective institution. The findings of the present study suggest that after controlling for the predictor variables and initial enrollment location, the effects of students' family income and high school academic performance similarly impact all students' odds of later enrollment at a selective or highly selective four-year institution, regardless of whether they matriculated to a community college or a four-year institution.

However, the current study builds upon Hilmer's (1997) results concerning the moderating effects of standardized test scores. Specifically, Hilmer found that students of low measured academic ability were more likely to enroll at institutions of greater selectivity if they first attended a community college as opposed to a four-year institution. The current results indicate that after controlling for the effect of initial enrollment location and other predictors, the effect of standardized test scores does not impact all students' odds of later enrollment at a selective or highly selective four-year institution in a similar manner. Instead, the effect of test scores appears to be greater for student's who matriculate to a community college rather than a four-year institution. The differences between the current study and Hilmer's (1997) study may be due to differences in the samples employed in each study. Hilmer used a sample which included only those community college students who successfully transferred to a four-year institution. Thus, many community college students who aspired to a bachelor's degree, but failed to transfer, were not included in his analyses.

The reason high school grade point average failed to similarly moderate the relationship between enrollment location and later enrollment at a selective or highly-selective four-year institution is not entirely clear. However, this may be accounted for by

the validity and reliability of high school grading practices. For example, the validity and reliability of high school grades may be affected by grade inflation and significant variation in grading practices from one high school to the next; and from one high school classroom to the next (Bassiri & Schulz, 1995; Tam & Sukhatme, 2003; Ziomek & Svec, 1995). In addition, high school grade point averages were reported via self-report on the SRI College Survey Answer Sheet (Robbins et al., 2006). Therefore, grades may have been inaccurately reported by participants. Conversely, ACT and ACT-concordant scores are standardized test scores, which are normed on nationally representative samples, possess high validity and reliability, and were verified with ACT records (ACT, 1997, 2004; Dorans et al., 1997; Robbins et al., 2006). Consequently, ACT and ACT-concordant scores are likely a more valid and reliable measure. Thus, the current finding, which suggests a lack of a moderation effect for high school grade point average, may be an artifact of measurement error.

The moderating effect of standardized test scores suggests that the odds of later enrollment at a selective or highly selective four-year institution are greater for students with higher standardized test scores; and that these odds are markedly increased for students who begin in a community college. This may be explained by a couple of factors unique to the community college setting. First, community colleges provide students with a “second chance,” increased support and encouragement, and remedial course offerings. These provisions may improve students’ psychosocial and study skill factors. For example, students may increase their time management and organization skills; receive increased encouragement and support; improve their note-taking skills, writing ability, and reading comprehension; and/or increase their academic self-confidence, goal commitments, and/or other psychosocial factors. Students experiencing these positive changes may feel more academically prepared and confident in their ability to perform academic-related tasks at a four-year institution relative to their four-year counterparts at the time they matriculated to a four-year institution. Upon transferring, community

college students may feel as though they are able to attend a four-year institution of higher selectivity than that which their similar four-year counterparts may have felt they were able to attend upon matriculating to college. As a result, they may apply to four-year institutions of greater selectivity than those to which they would have applied had they attended a four-year institution directly out of high school (cf. Hilmer, 1997). Further, they may apply to four-year institutions of greater selectivity than those to which their four-year counterparts initially applied to and attended directly from high school.

The aforementioned changes in psychosocial variables may fall short as an explanation because a parallel growth process likely occurs in four-year matriculates as they progress through their college careers. Therefore, a second explanation concerns the prerequisite need for community college matriculates to transfer in order to persist in higher education. To attain a bachelor's degree, the community college matriculate is compelled to leave one institution and attend another. The precondition of transferring may place the community college matriculate at an advantage for a couple of reasons. First, the community college matriculate likely receives significant support, guidance, and encouragement prior to and during the transfer process. Conversely, the four-year matriculate is likely discouraged from transferring and tends to navigate the process on his/her own. Second, the community college student is required to transfer if he/she desires to earn a bachelor's degree. Thus, the student is provided with a natural point at which to reflect on his/her growth and to consider the type of academic institution to which they are able to attend. Lacking this built-in decision point, the four-year matriculate is not compelled to reflect upon his/her academic growth and the type of institution to which they could presently attend. As a result, the four-year student presses forward with his/her educational pursuits at his/her current four-year institution. Future research is necessary to examine how psychosocial factors change and what role, if any, those changes have in the transfer process.

Private Four-year Institution Enrollment

No previous literature was identified which examined the odds of later enrollment at a private four-year institution as an outcome variable. In general, the results of the current study suggest that after accounting for the effects of initial enrollment location and the remaining predictor variables, there is nothing exclusive to the community college setting that appears to intensify the risk associated with one's race, generational status, family income, prior academic achievement, or self-reported psychosocial factors on students' odds of being enrolled at a private four-year institution three years after starting their college careers. Conversely, there is no evidence to suggest that there is anything unique to the community college setting which appears to increase the benefits associated with more advantaged student characteristics on student's odds of being enrolled at a private institution three years post-matriculation.

It is unclear why standardized test scores failed to significantly moderate the relationship between initial enrollment location and later enrollment at a private four-year institution, given the moderating effect indicated earlier concerning enrollment at a selective or highly selective institution. One possible reason for this is provided by statewide articulation agreements, which are intended to improve transfer rates between community colleges and public four-year institutions (Anderson, Sun, & Alfonso, 2006). Thus, if statewide articulation agreements ease the transfer process and increase transfer rates between community colleges and state-controlled four-year institutions, one explanation suggests that students are choosing to go to more selective state institutions rather than more selective private institutions. However, no empirical evidence exists to support this possible explanation and future research is warranted.

General Conclusions and Implications

Three years after beginning the pursuit of a bachelor's degree, only 33% of community college matriculates who participated in the current study were enrolled at a four-year postsecondary institution. Contrastingly, 69% of the participants who entered

higher education at a four-year institution remained enrolled three years later. The disparity in persistence rates found here is consistent with the literature reviewed previously (cf. Alfonso, 2006; Cabrera et al., 2005; Christie, 1999; Ganderton & Santos, 1995; Lavin & Crook, 1990; Pascarella & Terenzini, 2005; Rouse, 1995; Whitaker & Pascarella, 1994), which indicated that students who begin at a community college, as opposed to a four-year institution, are significantly less likely to persist into the upper echelons of higher education.

Using only the disproportionate persistence rates found here, one might erroneously conclude that initial community college enrollment hinders educational attainment, and thus upward social mobility, for disadvantaged groups. This conclusion is predicated on the belief that only, or primarily, disadvantaged students enroll at the community college level. However, based on the demographic information collected in this study and previous research (e.g., Horn et al., 2006), we know that both traditionally defined advantaged and disadvantaged students enroll at both community colleges and four-year institutions. For this reason, the aforementioned conclusion cannot be made based solely upon the percent difference noted here and elsewhere. Instead, an examination was warranted to determine whether key student characteristics moderate the path to educational attainment for bachelor's degree-seeking students who initiate their postsecondary educational pursuits at community colleges versus four-year institutions.

In consideration of a moderation effect, this study's results broadly and unequivocally indicate that student characteristics do not detrimentally modify the effect of initial community college enrollment on the odds of later enrollment outcomes at a four-year institution, a selective or highly selective four-year institution, or a private four-year institution. Thus, the results fail to support the side of the current controversy which suggests that community colleges disproportionately divert the educational attainment and social mobility of disadvantaged student groups in American society (Brint & Karabel, 1989; Dougherty, 1987, 1992, 1994; Karabel, 1972; Monk-Turner, 1988, 1990).

Although the odds of enrollment outcomes three-years post-matriculation were lower for community college matriculates and for students with greater risk factors (e.g., lower prior academic achievement, possessing low motivation, and/or being of low family income), the effect of initial community college enrollment on later enrollment outcomes did not appear to be modified (i.e., exacerbated or diminished; Frazier, Tix, & Barron, 2004) by these student risk factors. There is no evidence provided by the current study to suggest that disadvantaged students' odds of later enrollment outcomes are significantly decreased by initiating their postsecondary education at a community college as opposed to a four-year institution. Therefore, based on the disparate enrollment outcomes (i.e., 33% vs. 69%) and the general lack of moderation (with the exception of the effect of standardized test scores on enrollment at a selective or highly selective institution), a more accurate conclusion suggests that initial community college enrollment is related to a diminished likelihood of later enrollment outcomes for *all people* for reasons that are not yet fully understood. Several researchers suggest multiple factors which may explain the general persistence gap differences found in this study. These include factors suggested to be unique to and common among community colleges, factors unique to the process of leaving a community college and entering a four-year institution, factors unique to four year institutions, and individual factors. In the sections that follow, the implications of this study and possible explanatory factors are provided.

Implications for Students

The results of the current study suggest three broad implications for prospective and current community college students. First, there is a negative effect associated with initially attending a community college. For reasons that remain unclear, the results indicate that bachelor's degree-seeking students are significantly less likely to later be enrolled at a four-year institution if they start their postsecondary education at a community college rather than a four-year institution. Second, the results suggest that the negative effect associated with initially attending a community college appears to impact

all students similarly. This suggests that the risk associated with being a traditionally defined disadvantaged college student does not appear to be further exacerbated by attending a community college rather than a four-year institution. Conversely, the protective effect associated with belonging to a more advantaged student group does not appear to be significantly enhanced by attending a community college.

Third, the results indicate that as their standardized test scores increase, community college students are at increased odds of later enrolling at a selective or highly selective four-year institution relative to four-year matriculates. As previously suggested, this difference may be due to individual growth and maturity, increased self-awareness, improvements in academically relevant psychosocial and study skill factors, the inherent need to transfer to a four-year institution, or the interaction of these variables.

The results of this study are important for students making college enrollment decisions. At the individual level, there are multiple factors that contribute to a student's decisions to enroll at a community college. For example, students may choose to initiate their education at a community college due to lower tuition costs (Heller, 1997; The College Board, 2004); open admissions policies (AACC, 2008); and convenience, proximity, and/or remedial course offerings which provide for a second chance to attain an education (Cohen & Brawer, 1996; Grubb, 1991; Hilmer, 1997; Karabel & Astin, 1975; Pascarella & Terenzini, 2005). Although the current study attempted to control for many of these factors, for example, through age limitations and family income (i.e., to remove financially independent students) and prior academic achievements (i.e., to control for differences in academic preparation and ability); the current study did not account for all relevant variables. There may be several uncontrolled differences in the type of students who choose to begin at a community college rather than a four-year institution.

Researchers suggest several student factors that tend to be more prevalent among community college students, which were not fully accounted for in the current study. These differences may help to explain the general enrollment gap noted here. For example, the current study did not account for variables that relate to convenience (e.g., attending college within one's local community, avoiding the inconvenience of relocation, or perhaps, a greater variety of class schedule options). Other unaccounted for individual factors that may have affected the outcomes include single parenthood, childcare, and greater family obligations; lower social capital, a family background characterized by diminished support for educational pursuits, and/or a lack of information concerning how to move ahead educationally (Alford, 1998; Bubolz, 2001; Cohen & Brawer, 1996; Littrell, 1999; Striplin, 1999; Walpole, 2003); difficulty separating from their culture of origin (Littrell, 1999; Nelson, et al., 2006; Striplin, 1999); and lateral classism (cf. Liu et al., 2004; Nelson et al., 2006; Striplin, 1999). All of the aforementioned uncontrolled risk factors are believed to be more highly prevalent among community college students. These factors may account for some of the difference in the percentage of community college students who remained enrolled three years later relative to four-year students. Although many of the aforementioned factors were not directly measured and controlled for, many were indirectly accounted for via controlling for family income, race, and generation status for example. Future research should consider a means by which to directly assess and control for the impact of additional individual characteristics upon educational outcomes.

For the prospective college student facing an enrollment decision, the results of this study suggest that for reasons that remain unclear the student will incur lower odds of later enrollment at a four-year institution if he/she chooses to matriculate to a community college. However, independent of the negative effect associated with initial community college enrollment, the effects associated with his/her race, family income, generational status, prior academic achievement, and psychosocial factors are not significantly

intensified by attending a community college rather than a four-year institution. As indicated above, the community college population tends to be comprised of students who possess many unique and uncontrolled risk factors. Thus, the prospective student must weigh the financial, educational, social, familial, and occupational benefits of attending a college within his/her own community against the negative main effect associated with initial community college attendance. In addition, they must consider the risk associated with their idiosyncratic situation.

Implications for Vocational Psychology

There are several implications of this study for vocational psychology. First, this study suggests that when working with students who are making college enrollment decisions, it is important to consider the effects of individual student characteristics beyond race, generational status, family income, prior academic achievement, and/or self-perceived psychosocial and study skill variables. It is inaccurate to suggest to students that the risk associated with these characteristics is significantly exacerbated by attending a community college. As previously discussed, there are substantial and genuine benefits to attending a community college. When working with students making college enrollment decisions, it is the vocational psychologist's role to assist the student in identifying additional idiosyncratic risk factors associated with both the student and the institutions to which the student is contemplating enrolling. In this regard, it becomes the vocational psychologist's function to deepen the student's knowledge of these additional risk factors and to aid the student in making the most appropriate enrollment decision consistent with the student's educational and vocational goals.

Second, the results suggest that continued research needs to occur on multiple levels to identify the specific factors which exacerbate the risk of attrition associated with initial community college enrollment. At the individual level, it is important to continue work to identify the behaviors and characteristics that impact all community college students. Clearly, the factors which distinguish community college students who persist

and those who drop out have not been completely identified in the literature. The results of this study suggest that there is something common to, or commonly experienced by, all community college students which places them at greater risk of attrition relative to their four-year counterparts. The commonalities suggested here may be inherent to individuals who choose to initiate their education at a community college, community colleges, four-year institutions, and/or a combination of individual and institutional factors.

Third, the identification of the specific factors which explain the educational attainment gap will further inform our interventions and college retention efforts. Current interventions may fall short among community college matriculates due to targeting the incorrect risk factors. Greater research will aid in identifying the common risk factors associated with initial community college enrollment. When we are able to identify the specific risk factors which have empirically demonstrated an increased risk of attrition, our interventions will become more informed and more effective. Thus, we will be better able to improve the retention and educational attainment of community college students. This study suggests that, as a field, we must consider where we focus our interventions based upon empirical results.

Fourth, more research is called for which examines how students' career aspirations predict retention, persistence, and the enrollment outcomes examined in this study. Career aspirations may help explain the educational attainment gap found between community college and four-year matriculates. Several researchers have found that a significant number of community college matriculates come from backgrounds which lack social capital and the knowledge of how to progress educationally (cf. Alford, 1998; Bubolz, 2001; Cohen & Brawer, 1996; Littrell, 1999; Striplin, 1999; Walpole, 2003). It is possible that much of the educational attainment gap may be explained by differences in students' understanding of the education required to enter a given profession.

For example, in the current study, participants were asked to indicate their degree aspirations prior to, or shortly after, beginning their college careers. Both groups

indicated varying levels of degree aspirations ranging from a bachelor's degree to a doctoral or professional degree. However, if community college students tend to lack social capital, it is possible that they may have overestimated the level of education necessary to enter a given occupation. If this were the case, community college matriculates may overly and mistakenly endorse bachelor's degree aspirations. On paper, this may inflate the percentage of students who appear to be enrolled at the community college level for the purpose of completing a bachelor's degree. In turn, this over endorsement may erroneously increase the observed educational attainment gap. As students progress through the community college system and gain a greater understanding of the educational requirements for a given occupation, they may appear to alter their degree aspirations, all the while maintaining their original career goals. At the surface, this appears to be a significant educational attainment gap. However, a more accurate conclusion may be that fewer students enroll at the community college level with four-year degree aspirations than we currently believe.

Preliminary evidence supporting this supposition is reflected in research which finds that successful community college transfers more closely resemble the average four-year matriculate (Lee & Frank, 1990; Nora & Rendon, 1990; Striplin, 1999; Townsend et al., 1993). Thus, successful community college transfers (and their four-year counterparts) may significantly differ from community college matriculates who fail to transfer in regard to their initial understanding of how their proximal educational goals associate with their distal career goals. Future research should consider examining the correlation between degree and career aspirations and the extent to which career aspirations predict persistence and later enrollment. If the aforementioned is operating, career aspirations may serve as a more robust predictor than degree aspirations among the community college population. It is possible that the educational attainment gap, or a significant portion of the gap, can be explained by the difference in social capital among

community college students (relative to four-year matriculates) and their misunderstanding of the educational requirements needed to enter a given profession.

Finally, vocational psychologists must continue to define a greater role for our profession within secondary and postsecondary educational settings. In the context of high attrition rates, rising tuition costs, and a growing need for a more skilled workforce, it is believed that vocational psychologists can provide career interventions which will have a significant impact on the career development and academic persistence of college students. A significant amount of research has been conducted to determine how career interventions affect career decision making and career planning. It is often assumed that improving career decision making and career planning will result in increased academic retention. However, to date little research has demonstrated the effect of early career interventions on later enrollment outcomes (Folsom & Reardon, 2003). In this regard, further research is needed to demonstrate the efficacy of our work within the educational system. Specifically, we need to identify what works, when to provide given interventions, and how frequently to reinforce our earlier work.

At the college level, a current review of the research literature suggests that career interventions can positively affect retention (Folsom & Reardon, 2003). Further, Folsom and colleagues (2004-2005) provide counterintuitive support from a study they recently conducted. The results of their study demonstrated that a career planning course at a large southeastern four-year institution resulted in no significant difference in the persistence and graduation rates between participants and a non-participant comparison group. However, students who participated in the career planning course were referred by academic advisors due to a perceived need for academic and career planning. Thus, the lack of a significant difference may not reflect a lack of effectiveness, but rather a difference in between the type of students who participated in the career planning course and the comparison group, which was not identified as at at-risk group in need of intervention. When viewed from this perspective, this research suggests that career

interventions at the four-year institutional level may have a significant, yet undetected, impact upon the retention of students in need of academic and career guidance. Further research is needed at the collegiate level to determine the efficacy of our work as it relates to educational outcomes.

Additional support for how vocational psychology can affect academic performance and retention is provided via the integration of literature examining several tenets of Social Cognitive Career Theory (SCCT; Lent, Brown, & Hackett, 1994, 2000). SCCT posits that person variables (i.e., self-efficacy beliefs and outcome expectations; Lent et al., 1994, 2000), give rise to career and educational related goals (e.g., to earn a four-year degree and become a teacher), actions (e.g., college enrollment behavior), and performances (e.g., college academic performance, retention, and persistence/graduation). Research suggests that SCCT may be a viable framework from which to base our interventions and positively influence academic retention and persistence.

For example, McWhirter, Rasheed, and Crothers (2000) demonstrated that a SCCT informed career intervention increased students' career decision-making self-efficacy, vocational-skills self-efficacy, and outcome expectations. Further, a pilot study conducted by Ali, Button, and Hall (2009) demonstrated that academically relevant psychosocial variables (e.g., Academic Self-Efficacy) may be malleable and amenable to change through career interventions. The fact that career interventions affect these person variables is important provided meta-analytic research, which demonstrates that academically relevant psychosocial and study skill variables are predictive of college retention and academic performance (Robbins et al., 2004; 2006). Further, interventions provided at the college level have demonstrated that psychosocial and study skills are amenable to change and lead to increased performance and retention (Robbins, Oh, Le, & Button, in press). Collectively, these results indicate that career interventions targeting psychosocial variables (i.e., academic self-efficacy, career decision-making self-efficacy,

vocational-skills self-efficacy, and academic- and career-related outcome expectations) can enhance both academic performance and retention.

The aggregate results of the Ali et al. (in preparation) study and the McWhirter et al. (2000) study suggest that early career interventions by vocational psychologists or career/guidance counselors can improve self-efficacy beliefs and outcome expectations. In turn, these changes in person variables are theoretically believed to positively influence career and educational goals, actions, and performances (Lent et al., 1994, 2000); and empirically demonstrated to increase academic performance and retention (Robbins et al., in press). It is believed that if career interventions are provided earlier (i.e., middle school) and reinforced throughout a student's educational development, his/her odds of successful career and academic outcomes can be significantly increased. Longitudinal research is needed in which the effect of career interventions on proximal (i.e., changes in person variables, interests, and goals) and distal (secondary and postsecondary performance and retention) outcomes is examined.

Implications for Academic Institutions and Educational Policy

The results of this study indicate three broad implications for academic institutions and educational policy. First, there is no evidence to suggest that community colleges specifically exacerbate the risk associated with being a disadvantaged student. Conversely, there is no evidence to suggest that four-year institutions significantly diminish the risk associated with being a disadvantaged student. This finding indicates that community colleges fulfill a role defined by the juxtaposition of the first two roles of the community college system as put forth by the AACC (2008). Specifically, community colleges appear to provide open access to postsecondary education for *all people*. In addition, the results indicate that for reasons that remain unclear, initially attending a community college appears to negatively impact *all people* in a similar manner. Thus, student risk factors do not appear to negatively modify the effect of initial community

college enrollment on later enrollment outcomes. For educational policy, this suggests that greater funding is needed to support research aimed at identifying the specific factors which exacerbate the risk of attrition among bachelor's degree seeking students who matriculate to community colleges. By identifying these specific risk factors, interventions can be developed which more effectively assist students and thereby, improve transfer and bachelor's degree attainment rates.

Second, this study provides evidence which suggests that after accounting for the negative effect of initial community college enrollment, the effect of standardized test scores, among community college students, appears to disproportionately increase their odds of later enrollment at a selective or highly selective four-year institution relative to their four-year counterparts. As previously discussed, this may be due to several factors exclusive to community colleges, including remedial education course offerings, academic interventions aimed at improving psychosocial factors and study skills, and/or the transfer mission. For professionals in the community college setting, this finding suggests that they need to continue to provide current academic interventions, remedial education courses, and significant support for the transfer mission. In addition, it suggests that professionals, who assist community college students with the transfer process, should provide admissions information to four-year institutions of greater selectivity than that which the student may have been able to attend directly from high school based upon his/her standardized test scores. Of course, professionals should consider the academic growth (e.g., as demonstrated by college grades) made by potential transfer students prior to encouraging transfer to a more selective institution.

Third, there is a significant negative effect on later enrollment at a four-year institution associated with initial community college enrollment. However, it is premature and careless to assume a causal relationship between initial community college enrollment and diminished enrollment outcomes due to the fact that students are not randomized to either community colleges or four-year institutions. Consequently, there

are multiple uncontrolled for institutional factors, individual factors, and/or factors associated with four-year institutions that may account for additional variance in explaining the educational attainment gap. The remaining paragraphs review several possible uncontrolled for factors.

Dougherty (1992) found that community college faculty may hold lower expectations for their students, which in turn may negatively affect faculty support for students and diminish the transfer process. Conversely, it is implied that faculty members at four-year institutions hold higher expectations for their students, which may positively affect support and student persistence. Differences between faculty expectations at community colleges and four-year institutions were not controlled for in the present study and may merit consideration in future research. Given the significant difference in terms of persistence found in the current study (i.e., 33% vs. 69%) and Dougherty's (1992) finding, both community colleges and four-year institutions need to be cognizant of the possible additive or detrimental effects of faculty expectations upon student persistence. As discussed earlier, social and academic integration are important factors that are related to retention and degree attainment (Tinto, 1993). Faculty members play an integral part in the integration process. Thus, institutions may consider implementing workshops which aim to increase both community college and four-year institution faculty members' academic expectations for community college matriculates and transfer students. Workshops of this nature may result in increased academic and social integration, which may in turn positively affect retention, persistence, and degree completion.

Pascarella et al. (2003) found that that the average pre-college degree plans of a student body at a given community college are related to baccalaureate degree attainment rates. Thus, Pascarella and colleagues suggest that if the average degree plans at a given community college tend to be low, the odds of baccalaureate degree attainment are detrimentally affected. Due to the fact that community colleges fulfill many different roles including several which do not relate to attaining a bachelor's degree (AACC,

2008), it is safe to assume that the average pre-college degree plans at the included community colleges tended to be lower than those at the included four-year institutions. Therefore, extending Pascarella et al.'s (2003) findings, it is possible that the effect associated with a student body's average precollege degree plans at a given institution may partly account for the significantly smaller percentage of community college matriculates who were enrolled three years later.

To add support to this explanatory factor, there were significant differences in degree plans noted between (a) the included community college sample and the four-year sample and (b) the included community college sample and the excluded community college sample. Aggregately, this suggests that the average student body precollege degree plans were significantly lower among each of the community colleges included in the present study relative to each of the four-year institutions (see Tables 1 & 4 for a comparison of degree plans). This institution level factor was not controlled for in the present study and warrants greater consideration in future research. In terms of practice, two-year institutions may consider the earlier suggestion concerning ways by which to increase faculty expectations for students' academic performance and degree plans. In turn, efforts in this regard may increase the average student body degree plans for a given institution and thereby positively affect student retention and persistence across all levels of degree plans. Although not all community college students seek to earn a bachelor's degree, all students may benefit from an academic environment that encourages higher levels of educational attainment. For educational policy, efforts and funding to support and increase the transfer mission of community colleges may increase the number of bachelor's degree-seeking students who initiate their education at these institutions, thereby possibly increasing the average student body degree plans and bachelor's degree attainment rates.

As discussed in the section concerning the implications for vocational psychology, community college students tend to lack social capital and thus, they tend to

lack the knowledge of how to move ahead educationally and occupationally. On the surface, it seems intuitive to assume that individuals would be less likely to enroll in higher education if they lacked social capital. Therefore, we would expect to see fewer disadvantaged individuals enrolling at this setting. However, as discussed previously, it is possible that a lack of social capital tends to lead to increased enrollment at the community college setting (i.e., due to financial savings and uncertainty concerning career goals) and an over endorsement of bachelor's degree aspirations. Thus, they may endorse a bachelor's degree at the outset, while still engaged in the career exploration process. This may lead to an inaccurate inflation of the degree attainment gap. For community college professionals and state education policy, this suggests that greater funding and resources may be required at the community college level to enhance the career decision-making process. Additionally, educational policy which increases funding for increased career exploration and career development interventions beginning early and occurring regularly throughout an individual's academic development (i.e., middle school through college) may benefit students in terms of improved career decision-making, greater identification of career goals, and improved educational planning. This may result in enhanced retention, diminished misappropriations of educational funding, and a more educated and satisfied state workforce.

Finally, Townsend and Wilson's (2006) qualitative work suggests factors unique to the process of leaving a community college and entering a four-year institution which may negatively impact persistence. Due to the timing of the follow-up period involved in the present study (i.e., the beginning of the fourth-year of college) several community college students who successfully transferred to a four-year institution may have been lost to attrition prior to the follow-up. This may be particularly true if students followed a traditional enrollment path (i.e., transferred after completing two years at a community college), due to the fact that the follow-up period in this study occurred at what would have been the start of students' fourth year of college (i.e., following a traditional

enrollment path). If this were the case, it would appear that bachelor's degree-seeking community college students may not fail to persist due to factors unique to the community college, but rather due to the effects of factors unique to the transfer process (i.e., the interaction of community college and four-year institutional factors). Future research should empirically assess the effects of integration process on transfer students' persistence. For four-year institutions, greater efforts to academically and socially integrate community college transfers should be extended in a manner similar to that which currently exists for native first-year students to these institutions (e.g., orientation programs and first-year experience courses).

Contributions to the Literature

The current study offers several strengths and improvements over prior research in this field. This study was intended to, and in several ways did, address many of the shortcomings identified in previous research. However, this study was not able to address all of the limitations identified in previous work. Included throughout this section are the contributions of this study to the broader literature examining how initial community college enrollment affects the educational attainment of college students.

First, the most significant contribution of this study is an examination of whether student characteristics moderate the effect of initial community college enrollment on later enrollment outcomes. There is significant controversy concerning the transfer mission of community colleges. It has been suggested that community colleges divert disadvantaged students from educational attainment and other social mobility related outcomes (Brint & Karabel, 1989; Dougherty, 1987, 1992, 1994; Karabel, 1972; Monk-Turner, 1988, 1990). Much of the controversy surrounds the significant educational attainment gap noted between two-year and four-year matriculates who aspire to a bachelor's degree (e.g., Horn et al., 2006). However, the controversy is predicated on the belief that community colleges primarily enroll disadvantaged individuals. For this reason, it was important to examine whether the effect of initial community college

enrollment depends on student characteristics, as implied by the controversy surrounding the transfer mission.

Hilmer's (1997) study provided the first evidence to consider whether student characteristics moderate the effect of initial community college enrollment on later enrollment outcomes. Therefore, in addition to extending his findings by considering the moderating effects of family income level and academic ability, this study added to our understanding by examining whether race, college generation status, and psychosocial factors also moderated the odds of later enrollment outcomes.

In terms of additional predictor variables, this study is the first known study to control for differences in self-perceptions of narrowly defined academically relevant psychosocial factors (i.e., the SRI; Robbins et al., 2006). Numerous researchers implicate differences in psychosocial factors between two-year and four-year matriculates as possible variables which may contribute to the educational attainment gap (Dougherty, 1992; Hellman, 1996; Horn et al., 2006; Mitchell, 1997; Nelson et al., 2006; Pascarella & Terenzini, 2005; Striplin, 1999; Tsui, 2003). Therefore, this study extended previous research by introducing controls for psychosocial factors and testing for possible moderation effects on the aforementioned outcomes.

Second, this study provided for multiple improvements in methodology and statistical analyses. The sample used in this study represents a significant strength in several ways. To begin, it was a large (n = 7,147) and diverse cohort of full-time students who entered higher education at both two-year and four-year institutions for the first time in the fall of 2003. The sample was comprised of students drawn from nearly every U.S. state, who were attending a variety of colleges located across a vast geographic area. Consequently, the results of this study are considered highly generalizeable to traditional college students who seek to earn a bachelor's degree, matriculate to both two-year or four-year institutions, and follow conventional enrollment pathways. In addition, the sample used in the analyses included a pre-transfer community college sample. Important

previous work employed post-transfer samples (e.g., Hilmer, 1997), which fail to consider the significant number of students who aspire to a bachelor's degree upon starting their college career, but fail to successfully transfer into a four-year institution (Horn et al., 2006). Thus, we are able to obtain a more complete picture of what really occurs during the transfer process. Finally, the sample employed the use of a two-group design (i.e., two-year versus four-year matriculates), which allowed for a comparison group by which we could examine the extent to which bachelor's degree seeking community college matriculates were able to transfer into the upper divisions of four-year degree granting institutions, relative to their counterparts who matriculated to a four-year institution.

The current study held constant the effects of several important variables, which have long been implicated as possible explanatory variables. These variables include planned work hours while enrolled, degree aspirations, gender, receipt of financial aid, and the variables included in the tests of moderation (i.e., race, family income, generational status, prior academic achievement, and psychosocial factors). In addition, the inclusion criteria helped better isolate the effect of initial community college enrollment on students' enrollment status at the beginning of year four. For example, the age limitations (i.e., 17 – 20 years old) restricted the number of financially independent students, who significantly differ from financially dependent students in terms of greater work and familial obligations (e.g., Cabrera, et al., 2006; Horn et al., 2006). Thus, we were better able to isolate the tests of moderation.

Statistically, this study used hierarchical logistic regression analysis. This allowed us to better estimate the effect of students' entering institutions. Given the variety of missions among community colleges (AACC, 2008) and previous research which suggests that individual institutions may produce varying effects (e.g., Pascarella et al., 2003), the use of hierarchical logistic regression analysis allowed us to account for individual institution effects by allowing the model's intercepts to vary by entering

institution. That is, we specified the institution-specific intercepts as random effects, while using institution type (i.e., two-year versus four-year) as a level two predictor variable of the mean intercept across entering institutions, allowing us to better account for this effect.

Finally, this study represents only the second study identified by the current researcher to examine whether initial community college enrollment affects the path to social mobility, as evidenced by the type of four-year institutions to which community college students are able to transfer. Hilmer (1997) was the first to use a similar outcome and represents an important first step in understanding the educational attainment and social mobility process. Building upon his work, this study examined additional enrollment outcomes including four-year institutions, private four-year institutions, and selective or highly selective four-year institutions. Perhaps the most unique contribution of the current study concerns the fact that it is the first study to examine enrollment at a private four-year institution as an outcome variable. This is important, as previous work suggests that graduating from private four-year institutions is related to increased social mobility. Again, graduates of private institutions incur a slight financial advantage over graduates of publicly-controlled institutions (Pascarella & Terenzini, 2005)

The use of the aforementioned outcome variables is a significant contribution to this body of literature and provides for essential information concerning whether these institutions offer a similar path to educational attainment and social mobility. As previous research has demonstrated, there are greater educational, occupational, and economical gains associated with graduating from private and more selective four-year institutions (Pascarella & Terenzini, 2005). Because successful community college transfers are as likely to complete their degree (relative to four-year native student; Berkner et al., 2002; Cuccaro-Alamin, 1997), the results suggest that they also share similar odds of later social mobility outcomes associated with graduating from these institutions. Again, by

using these variables, we are better able to understand the relationship between initial community college enrollment and social mobility.

Limitations

There are several limitations to the current research. The primary limitation to this study, and any other research in this field, is the fact that we were unable to attain a randomized sample. For reasons that remain to be fully understood, students choose to attend one type of institution over another. Consequently, we can only provide correlational evidence. Causal effects cannot be identified. This is a limitation that will continue to impede any investigation concerning the effects of initial community college enrollment.

Randomization aside, there are several additional limitations to the current study. At the individual level, this study failed to control for several variables which may distinguish community college matriculates from students who begin at a four-year institution. Previous research suggests that community college students face more frequent and greater barriers to their education than their four-year counterparts (Cabrera et al., 2006; Lanni, 1997; Tinto et al., 1994). Although we attempted to limit the impact of many of these variables, we did not query for all of these factors and therefore, we likely did not fully minimize these effects.

In addition, previous research has suggested that community college students tend to come from backgrounds which lack information concerning how to navigate the system of higher education (Littrell, 1999; Striplin, 1999; Walpole, 2003). As discussed previously, this may lead to inflated degree aspirations. In this regard, career aspirations may be a better predictor among community college samples. However, due to methodological constraints, we were unable to assess and control for the effect of students' knowledge of, or access to, information related to how to advance within postsecondary education.

Other individual factors that were unable to be accounted for in the current study include the process of acculturating to the new academic environment, new ideas, and new lifestyles often associated with higher education. Thus, the process of separating from one's prior culture and entering a new one may create significant discomfort (Littrell, 1999; Nelson et al., 2006; Striplin, 1999). As discussed previously, phenomenon such as lateral classism may drive some of the results we are seeing in terms of the enrollment outcomes, whereby community college students are discouraged by their family from attaining higher levels of education (Liu et al., 2004). Again, this may heighten feelings of discomfort and distress, which may result in higher rates of attrition (Liu et al., 2004; Nelson et al., 2006; Striplin, 1999).

At the institution level, previous research suggests several factors which were uncontrolled for in the present study and may help explain the attainment gap (e.g., average pre-college degree plans for a given institution's student body). An additional uncontrolled for institution level factor concerns students' adjustment and integration as they move from a community college to a four-year institution (Townsend & Wilson, 2006).

At the state education policy level, the current study failed to account for statewide articulation agreements, which may explain additional variance. Articulation agreements are intended to improve transfer rates from community colleges to four-year institutions, although the evidence supporting their effectiveness is mixed (Anderson et al., 2006). Given the intention of these agreements, they may have significantly influenced the enrollment outcomes in the current study.

In terms of methodology, the length of follow-up may limit our understanding of community college students' educational pathways in a couple of ways. First, as alluded to in the previous paragraph, we are unable to determine if post-transfer attrition may explain some the persistence gap found in the current study due to the fact that we have only one outcome data point (i.e., fall 2006). Thus, many students who successfully

transferred and dropped out of college prior to the follow-up may have been overlooked. Second, community college students are more likely to follow non-traditional enrollment pathways (e.g., part-time, delayed, and interrupted; Alfonso, 2006; Pascarella & Terenzini, 2005). Due to the relatively short follow-up (e.g., three years post-matriculation), these varying enrollment pathways may cause us to underestimate later enrollment outcomes. Although the follow-up interval occurred at what would be the beginning of their fourth year of college, this interval assumed that students would follow traditional enrollment paths, which may or may not have been the case. Whether the follow-up interval explains the difference in later enrollment outcomes found in this study remains to be seen. Future research examining this cohort will aid in furthering our understanding.

An additional possible limitation concerns the number of comparisons involved in this study. The possibility exists that the significant test of moderation found concerning the effect of standardized test scores on the odds of later enrollment at a selective or highly selective four-year institution may be due to chance (i.e., Type I error). Specifically, as the number of comparisons increase, the probability of making a Type I error also increases (Hays; 1994; Wampold, Davis, & Good, 2003). Conversely, the possibility exists that the non-significant tests of moderation may have similarly occurred by chance even though a moderation effect was present (i.e., Type II error; Hays, 1994; Wampold et al., 2003). In this regard, the problem of multiple comparisons suggests that the current results may be due to chance.

Fortunately, for the purpose of this study, two antithetical results were not detected. Given the consistency of the findings (i.e., a lack of moderation) and the possible explanatory factors suggested by prior research (i.e., academic/psychosocial growth and/or the prerequisite of transferring in order to earn a four-year degree) surrounding the one significant test of moderation, the aggregate results suggest that Type I and Type II errors are not likely to be operating. That is, it is unlikely that the

current results occurred by chance alone. Further research examining whether student characteristics modify the effect of initial enrollment location on the odds of later enrollment outcomes will provide for greater clarification in this regard and potentially additional support for the findings of this study.

Finally, much emphasis has been placed on the role of idiosyncratic factors in the path to social mobility. However, this study is limited in that it was unable to account for systemic factors which may have accounted for or contributed to variations in student's paths to social mobility (e.g., regional or statewide variations in the role and mission of community colleges). To the extent possible, future research should attempt to account for the effects of these differences.

Future Directions

The current study advances our understanding of the educational attainment and social mobility process. It builds upon the important work of several researchers and begins to shed light on the important, and often controversial, transfer mission associated with community colleges. However, there are no clear answers to the current debate and there remains a significant amount of work to be accomplished before we are able to fully understand and ameliorate the educational attainment gap. In the remaining paragraphs, the author offers suggestions for future research and encourages the continual examination of the educational attainment and social mobility process within American society.

Due to the fact that many unaccounted for variables may have affected the outcomes of interest, future research in this area should consider controlling for familial obligations (e.g., teen pregnancy and childcare), additional barriers (i.e., transportation limitations, classism, and perceived levels of support and encouragement from one's significant others and/or family of origin) and variables inherent to the institution (i.e., statewide articulation agreements, faculty expectations, emphasis on the transfer mission, support for transferring, remedial education courses, and academic interventions).

Given the moderating effect of standardized test scores, future research should investigate the extent to which initial enrollment location affects psychosocial variables. Specifically, future research should examine whether psychosocial and study skill variables remain constant, change similarly regardless of entry institution, or whether the degree of change varies based upon where students matriculate. In turn, research should consider the extent to which changes in psychosocial variables mediate the relationship between initial enrollment location and later enrollment behavior. Advances in this direction may inform practice and intervention guidelines, by which we may improve the transfer process and increase the educational attainment and social mobility of students who initiate their education at the community college level.

As previously discussed, the follow-up interval and the increased propensity of community colleges students to follow non-traditional enrollment paths (Alfonso, 2006; Pascarella & Terenzini, 2005) may limit our understanding of the educational attainment and social mobility process. It will be important to continue to track this sample and examine these outcomes again at several different points in the future, perhaps with the addition of a degree completion outcome.

Given the qualitative findings of Townsend and Wilson (2006) it will be important for future researchers to examine how leaving a community college and joining a four-year institution community affects the social and academic integration of students. Differences between faculty expectations at community colleges and four-year institutions were not controlled for in the current study and may merit consideration in future research. In addition, the average student body degree plans, as an institution level predictor, was not controlled for in this study and warrants greater consideration in future research.

Further, the results of the current study suggest that the effect of initial community college enrollment on the odds of being enrolled at a selective or highly selective institution is moderated by standardized test scores. The lack of a similar effect

for later enrollment at a private four-year institution is suggestive of a possible mediator. In this regard, it is important to examine what role, if any, statewide articulation agreements may play in this regard. In general, articulation agreements occur between community colleges and public four-year institutions (Anderson et al., 2006). Future research may consider whether students are choosing to transfer into more selective public institutions as opposed to private institutions due to the effects of articulation agreements. However, no empirical evidence exists to support this possible explanation and future research is needed.

Finally, continued research is necessary to assist those students who fall outside the inclusion criteria of this study. It is imperative to examine how the path to educational attainment differs for students who fall outside the traditional college-age band and who follow non-traditional enrollment paths. Although they fall outside the realm of traditional college students, their educational aspirations and personal investment in the American dream are no less important. Thus, it is essential to examine how the effect of initial community college enrollment differs for these students.

Concluding Remarks

After controlling for traditional predictor variables, community colleges provide all people, who matriculate to these institutions and seek to earn a bachelor's degree, with a similar path to educational attainment and social mobility. Specifically, the results of this study suggest that people are impacted analogously by the negative effect associated with initially attending a community college. This conclusion is predicated on the fact that community college students share similar odds of later enrollment behavior (as evidenced by a lack of moderation in the present study) and previous research, which indicates that they are as likely to complete a bachelor's degree once they successfully transfer (Adelman, 1998; Anglin et al., 1995; Berkner et al., 2002; Cuccaro-Alamin, 1997; DesJardins et al., 1999; Eimers & Mullen, 1997; Lee et al., 1993). However, for reasons that remain to be fully understood, initially attending these institutions is related

to a significantly lower likelihood of transfer into a four-year institution. It is hoped that future research can begin to unravel the reasons for this discrepancy. Until then, students can take comfort in knowing that any risk associated with their race, family income, generational status, prior academic achievements, and psychosocial factors is not further extended by beginning their education at the community college level.

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APPENDIX

Table A1

Background & Demographics, Plans & Expectations:
Included vs. Excluded Community College Groups

	Included (n = 1,708)		Excluded (n = 4,442)				
Variable	n	%	n	%	χ^2	df	*p*
Female (n = 6,147)	867	50.8	2,596	58.5	29.89	1	**
First-Generation (n = 5,935)	1,103	35.4	3,220	76.2	178.6	1	**
Family Income (n = 3,995)					101.2	5	**
<24,000	281	16.5	659	28.8			
24,001 – 50,000	570	33.4	763	33.4			
50,001 – 75,000	455	26.6	473	20.7			
75,001 – 100,000	233	13.6	213	9.3			
100,001 – 150,000	118	6.9	114	5.0			
>150,000	51	3.0	65	2.8			
Race (n = 6,088)					252.7	7	**
African American	167	9.8	1,024	23.4			
American Indian/Alaskan Native	9	0.5	41	0.9			
Asian	34	2.0	91	2.1			
Caucasian	1,445	84.6	2,848	65.0			
Hispanic/Latino	35	2.0	132	3.0			
Hawaiian/Other Pacific Islander	2	0.1	28	0.6			
Other	16	0.9	108	2.5			
Intended Hours Work Per Week (n = 5,668)					195.3	4	**
1 – 5	235	13.8	480	12.1			
6 – 10	218	12.8	348	8.8			
11 – 15	355	20.8	501	12.6			
16 – 20	472	27.6	898	22.7			
> 20	428	25.1	1,733	43.8			
Receive Financial Aid (n = 6,037)					26.02	2	**
Yes	1,083	63.4	2,972	68.7			
No	396	23.2	757	17.5			
Undecided	229	13.4	396	13.8			
Degree Aspirations (n = 5,947)					1,303.5	4	**
Bachelor's Degree	1,133	66.3	1,502	35.4			
1-2 years graduate study	329	19.3	345	8.1			
Doctorate or Professional Degree	246	14.4	306	7.2			

Note: 2-year n = 6,150; *$p < .05$; ** $p < .01$

Table A2

Prior Academic Achievement: Included vs. Excluded Community College Groups

Variable	Included (n = 1,708) M	Included (n = 1,708) SD	Excluded (n = 4,442) M	Excluded (n = 4,442) SD	*t*	df	*p*
ACT/Concordant Score	19.35	3.90	17.60	3.69	15.09	3,182	**
High School GPA	2.92	0.61	2.59	0.66	18.44	2,487	**

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

Table A3

Psychosocial and Study Skill Factors: Included vs. Excluded Community College Groups

Variable	Included (n = 1,708) M	Included (n = 1,708) SD	Excluded (n = 4,442) M	Excluded (n = 4,442) SD	*t*	*p*
Academic Discipline	45.87	8.48	47.62	7.90	7.61	**
Academic Self-Confidence	50.74	10.02	51.81	9.91	3.77	**
Communication Skills	49.82	6.55	50.69	6.77	4.57	**
Commitment to College	53.00	7.01	53.67	7.14	3.32	**
Social Connection	49.68	8.14	46.31	8.83	-13.71	**
General Determination	56.52	6.93	58.32	6.98	9.07	**
Emotional Control	49.29	10.13	51.59	10.77	7.62	**
Goal Striving	49.99	6.52	51.62	6.70	8.59	**
Social Activity	42.66	9.18	42.51	9.51	-0.56	
Study Skills	51.48	9.58	55.42	9.78	14.23	**

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

Table A4

Background and Demographics, Plans & Expectations:
Included Community College vs. Four-year Groups

Variable	Two-Year n	Two-Year %	Four-year n	Four-year %	χ^2	df	*p*
Female	867	50.8	3,020	55.5	11.90	1	**
First-Generation	1,103	64.6	2,735	50.3	106.81	1	**
Family Income					40.04	5	**
<24,000	281	16.5	927	17.0			
24,001 – 50,000	570	33.4	1,594	29.3			
50,001 – 75,000	455	26.6	1,299	23.9			
75,001 – 100,000	233	13.6	789	14.5			
100,001 – 150,000	118	6.9	538	9.9			
>150,000	51	3.0	292	5.4			
Race					167.19	6	**
African American	167	9.8	1,083	19.9			
American Indian/Alaskan Native	9	0.5	41	0.8			
Asian	34	2.0	102	1.9			
Caucasian	1,445	84.6	3,786	69.6			
Hispanic/Latino	35	2.0	360	6.6			
Hawaiian/Other Pacific Islander	2	0.1	12	0.2			
Other	16	0.9	55	1.0			
Intended Hours Work Per Week					366.43	4	**
1 – 5	35	13.8	1,652	30.4			
6 – 10	218	12.8	949	17.4			
11 – 15	355	20.8	1,167	21.5			
16 – 20	472	27.6	1,064	19.6			
> 20	428	25.1	607	11.2			
Receive Financial Aid					118.87	2	**
Yes	1,083	63.4	4,100	75.4			
No	396	23.2	985	18.1			
Undecided	229	13.4	354	6.5			
Degree Aspirations					294.82	2	**
Bachelor's Degree	1,133	66.3	2,315	42.6			
1-2 years graduate study	329	19.3	1,721	31.6			
Doctorate or Professional Degree	246	14.4	1,403	25.8			

Note: Community College n = 1,708; Four-year n = 5,439; *p < .05; ** p < .01

Table A5

Prior Academic Achievement: Included Community
College vs. Four-year Groups

Variable	Two-year M	Two-year SD	Four-year M	Four-year SD	*t*	df	*p*
ACT/Concordant Score	19.35	3.90	21.68	4.40	20.88	3,182	**
High School GPA	2.92	0.61	3.29	0.50	22.75	2,487	**

Note: Community College n = 1,708; Four-year n = 5,439; *p < .05; ** p < .01

Table A6

Psychosocial and Study Skill Factors: Included Community College vs. Four-year Groups

Variable	Two-year M	Two-year SD	Four-year M	Four-year SD	*t*	*p*
Academic Discipline	45.87	8.48	47.00	7.93	-5.07	**
Academic Self-Confidence	50.74	10.02	53.08	9.55	-8.73	**
Communication Skills	49.82	6.55	49.42	6.84	2.11	*
Commitment to College	53.00	7.01	53.25	7.19	-1.29	
Social Connection	49.68	8.14	50.34	8.53	-2.79	**
General Determination	56.52	6.93	56.33	7.23	0.96	
Emotional Control	49.29	10.13	48.18	10.10	3.99	**
Goal Striving	49.99	6.52	50.36	6.72	-1.96	*
Social Activity	42.66	9.18	41.75	9.37	3.50	**
Study Skills	51.48	9.58	52.00	9.25	-2.01	*

Note: Community College n = 1,708; Four-year n = 5,439; *p < .05; ** p < .01

Table A7

Overall Interaction Tests

Overall Test	Enrollment Outcomes: Four-year Institution		Selective or Highly Selective		Private Institution	
	$F_{(3, 7069)}$	*p*	$F_{(3, 7069)}$	*p*	$F_{(3, 7069)}$	*p*
Group * Race	0.03		0.79		2.40	
	$F_{(1, 7069)}$	*p*	$F_{(1, 7069)}$	*p*	$F_{(1, 7069)}$	*p*
Group * First Generation	2.43		1.15		3.67	
Group * Family Income	3.00		0.68		1.29	
Group * High School GPA	0.16		1.21		0.06	
Group * ACT/Concordant Score	0.09		6.70	**	3.38	
Group * Academic Discipline	1.07		1.01		0.52	
Group * Academic Self-Confidence	0.02		0.50		2.89	
Group * Communication Skills	0.27		0.01		0.17	
Group * Social Connection	0.44		0.31		0.02	
Group * Emotional Control	0.31		0.03		0.54	
Group * Social Activity	3.36		3.57		0.01	

*Note: n=7,147; *p=<.05; **p<.01*

Table A8

Hierarchical Logistic Regression Model for Enrollment at a Four-year Institution Three Years Later

Predictor	Log-odds of Enrollment at a Four-year Institution		
	β	se	*p*
Intercept	0.517	0.133	**
Institution Variance	0.092	0.032	**
Institution Type (2-year)	-1.105	0.139	**
African-American	0.013	0.118	
Hispanic/Latino	-0.023	0.181	
Other Minority	-0.031	0.165	
First Generation	0.362	0.061	**
Gender (female)	0.043	0.060	
Received No Financial Aid	-0.152	0.117	
Received Financial Aid	-0.132	0.105	
Degree Aspiration greater than B.A.	0.219	0.067	**
Family Income	0.051	0.028	
High School GPA	0.724	0.076	**
ACT/ACT Concordant Score	0.068	0.011	**
Academic Discipline	0.037	0.005	**
Academic Self-Confidence	-0.024	0.005	**
Communication Skills	-0.015	0.006	*
Social Connection	0.010	0.005	
Emotional Control	0.007	0.004	
Social Activity	0.003	0.004	
Expected Hours Worked per Week	-0.173	0.021	**
Group * African American	-0.073	0.262	
Group * Hispanic/Latino	-0.080	0.458	
Group * Other Minority	-0.006	0.356	
Group * 1st Generation College Student	0.213	0.137	
Group * Family Income	0.093	0.054	
Group * High School GPA	0.057	0.144	
Group * ACT/Concordant Score	0.007	0.022	
Group * Academic Discipline	-0.011	0.011	
Group * Academic Self-Confidence	0.001	0.009	
Group * Communication Skills	0.006	0.012	
Group * Social Connection	-0.007	0.011	
Group * Emotional Control	0.004	0.008	
Group * Social Activity	-0.016	0.009	

Note: n=7,147; *p=<.05; **p<.01

Table A9

Hierarchical Logistic Regression Model for Enrollment at a Selective or Highly Selective Four-year Institution Three Years Later

	Log-odds of Enrollment at a Selective or Highly-Selective Four-year Institution		
Predictor	β	se	*p*
Intercept	-2.831	0.378	**
Institution Variance	2.398	0.584	**
Institution Type (2-year)	0.401	0.509	
African-American	-0.155	0.195	
Hispanic/Latino	-0.217	0.321	
Other Minority	-0.040	0.240	
First-Generation College Student	0.258	0.092	**
Gender (female)	-0.044	0.092	
Received No Financial Aid	0.015	0.169	
Received Financial Aid	-0.020	0.154	
Degree Aspiration greater than B.A.	0.311	0.105	**
Family Income	0.039	0.041	
High School Grade Point Average	0.465	0.134	**
ACT/ACT Concordant Score	0.024	0.016	
Academic Discipline	0.030	0.008	**
Academic Self-Confidence	-0.014	0.007	*
Communication Skills	-0.013	0.009	
Social Connection	0.003	0.008	
Emotional Control	0.006	0.006	
Social Activity	0.013	0.007	
Expected Hours Worked per Week	-0.187	0.034	**
Group * African American	-0.263	0.455	
Group * Hispanic/Latino	-0.965	1.094	
Group * Other Minority	0.505	0.484	
Group * First Generation	0.209	0.195	
Group * Family Income	0.063	0.076	
Group * High School GPA	0.248	0.226	
Group * ACT/Concordant Score	0.082	0.032	**
Group * Academic Discipline	-0.015	0.015	
Group * Academic Self-Confidence	0.009	0.013	
Group * Communication Skills	0.001	0.018	
Group * Social Connection	0.009	0.016	
Group * Emotional Control	-0.002	0.011	
Group * Social Activity	-0.024	0.013	

*Note: n=7,147; *p=<.05; **p<.01*

Table A10

Hierarchical Logistic Regression Model for Enrollment at a Private Four-year Institution Three Years Later

Predictor	Log Odds of Enrollment at a Private Four-year Institution		
	β	se	*p*
Intercept	-3.202	0.403	**
Institution Variance	2.237	0.544	**
Institution Type (2-year)	0.032	0.515	
African-American	-0.461	0.346	
Hispanic/Latino	-0.369	0.640	
Other Minority	-0.304	0.406	
First Generation	0.391	0.124	**
Gender (female)	0.320	0.127	*
Received No Financial Aid	-0.186	0.233	
Received Financial Aid	-0.466	0.206	*
Degree Aspiration greater than B.A.	0.008	0.142	
Family Income	0.060	0.057	
High School Grade Point Average	0.371	0.188	*
ACT/ACT Concordant Score	0.029	0.023	
Academic Discipline	0.029	0.012	*
Academic Self-Confidence	-0.017	0.010	
Communication Skills	0.012	0.014	
Social Connection	-0.006	0.011	
Emotional Control	0.006	0.008	
Social Activity	-0.0002	0.009	
Expected Hours Worked per Week	-0.112	0.046	*
Group * African American	1.405	0.535	**
Group * Hispanic/Latino	0.559	1.008	
Group * Other Minority	-0.133	0.863	
Group * First Generation	0.494	0.258	
Group * Family Income	-0.120	0.106	
Group * High School GPA	-0.071	0.295	
Group * ACT/Concordant Score	0.079	0.043	
Group * Academic Discipline	0.016	0.022	
Group * Academic Self-Confidence	-0.030	0.017	
Group * Communication Skills	0.011	0.025	
Group * Social Connection	0.003	0.020	
Group * Emotional Control	0.011	0.015	
Group * Social Activity	-0.001	0.017	

*Note: n=7,147; *p=<.05; **p<.01*