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TRANSFER RATES AND BACCALAUREATE ATTAINMENT: TWO-YEAR VERSUS HYBRID COLLEGES

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Abstract

This exploratory study examined how beginning at a hybrid college that offered baccalaureate degrees while retaining its subbaccalaureate mission of associate degrees and certificates (Floyd & Skolnik, 2005; Lorenzo, 2005), as compared to a beginning at a two-year college, affected transfer and baccalaureate attainment. Additionally, it determined how social background, other precollege personal characteristics, external demands as students enter college, and experiences during college affected transfer rates and baccalaureate attainment in the same manner as Dougherty and Kienzl (2006).

This study assumed a quasiexperimental design with an ex post facto, causal-comparative case control analysis (Sprinthall, 2003). It used information from the Beginning Postsecondary Students (BPS) Longitudinal Study (NCES, 2008a) and the National Education Longitudinal Study (NELS) of 1988 (NCES, 2008b) and data was collected from 60 hybrid or treatment colleges and 469 two-year or control colleges where students had begun their postsecondary education. The treatment groups consisted of 149 students from the BPS dataset and 230 students from the NELS dataset. The control groups had 1,168 students from the BPS dataset and 2,354 students from the NELS dataset.

Descriptive statistics and chi-square analyses were used to understand the differences between the treatment group and the control group in relation to transfer and baccalaureate attainment. Additionally, Pearson correlation and bivariate analyses via logistic regression were used to further understand transfer and baccalaureate attainment overall by controlling for students' background characteristics.

Students who attended hybrid colleges were significantly less likely to transfer (with mixed results between the chi-squared and logistic regressions), had a significantly higher

likelihood of attaining baccalaureate degrees when combining the first and second degree attained, and had a significantly higher likelihood of obtaining a baccalaureate degree overall—even when the results controlled for a number of potentially confounding background and experiential factors— than students who attended two-year colleges. These results provided preliminary evidence for the need for further investigation in examining the influence of hybrid colleges on student transfer patterns and baccalaureate attainment.

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Chapter 1

This introduction chapter presents: (a) an overview of the literature; (b) the statement of the problem; (c) the purpose and overview of this study; (d) the study description; (e) the significance of the study; and (f) the organization of the study. Higher education has played a critical role in the personal, social, and intellectual development of its students and the economic and societal improvement of communities (Baum, Ma, & Payea, 2010; Lucas, 1994). Gaining a baccalaureate degree has remained a key to securing financial independence and has had a significant economic return over an associate's degree, a certificate, or a high school diploma (Grubb, 1997; Kuh et al., 2008; Surette, 2001; U.S. Department of Commerce, 2003). Postsecondary degree attainment has been revealed to have a positive impact on the following: earnings, employment, job satisfaction, pensions, health insurance, exercise, school readiness, parental involvement in children's activities, volunteering, voting, reducing smoking, and decreasing obesity (Baum et al., 2010; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008).

The economic downturn of 2008–09 increased the demand for four-year graduates as employers became more selective in their hiring (Baum et al., 2010; Greer, Ireland, & Wingender, 2001). Recently, President Obama has focused on two-year and community colleges as critical mechanisms for making the proportion of college graduates in the U.S. the highest in the world by 2020 (Roberts & McGinnis, 2012).

College origins, that is, where a student starts college, can correlate with retention and graduation outcomes (Alfonso, 2006; Dougherty & Kienzl, 2006; McPherson & Schapiro, 1999; Provasnik & Planty, 2008; Stephan, Rosenbaum, & Person, 2009). For example, research indicates that students who begin at and continue to attend women-only colleges and historically Black colleges and universities (HBCUs) have better educational outcomes than similar students

at coeducational and historically White colleges and universities (HWCUs) (Jackson, 2002; Kim & Conrad, 2006; Miller-Bernal, 1993; Renn, 2012; Riordan, 1994; Tidball, Smith, Tidball, & Wolf-Wendel, 1999; Wenglinsky, 1996; Wolf-Wendel, Baker, & Morphew, 2000). Riordan's (1994) analysis revealed that, for each year of attendance at women-only colleges, there were incremental benefits in overall degrees earned and yearly earnings. These findings imply that institutional structures and cultures can be powerful forces in shaping student academic success, a departure from the student-deficiency explanations for differential transfer and graduation rates across student groupings (Riordan, 1994; Tidball et al., 1999; Wenglinsky, 1996).

College origins also matter in terms of attendance at two-year or four-year colleges[1] and attainment of the baccalaureate degree. Despite the fact that two-year college enrollment growth has outpaced four-year college enrollment (Sandy, Gonzalez, & Hilmer, 2006), many students who begin their postsecondary studies at community colleges go astray or divert their educational paths (Lorenzo, 2005; U.S. Department of Education, 2001b). These students are less likely than those who begin at four-year colleges to persist and obtain the baccalaureate degree as they often have to manage unique challenges (Ishitani, 2008; Porter, 1999; U.S. Department of Education, 2003). The low baccalaureate attainment rates for those who aspire to a four-year degree and begin at a two-year college are major concerns for educators, administrators, and policy makers (Alfonso, 2006; Arbona & Nora, 2007; Wassmer, Moore, & Shulock, 2004). Studies have been done to better understand these differential rates, including examining aspirations to secure the baccalaureate degree. Pascarella, Edison, Nora, Hagedorn, and

[1] The terms two-year college and four-year college refer to degrees offered and not to expected completion time. The terms two-year college and community college suggest that the associate's degree is the highest degree offered, except when the community college in question offers the baccalaureate degree.

Terenzini (1998) found that two-year students' aspirations to attain a baccalaureate degree were 20% lower after their second year than their precollege degree aspirations, compared to those attending four-year colleges. Students who transfer from a two-year college to a four-year institution can also face major unique challenges in navigating a new college environment as compared to those who begin at a four-year college. In adapting to a new college, they may struggle to understand different admissions and financial aid policies and procedures, to have prior credits evaluated, and to adjust to major differences in academic rigor (e.g., emphasis on writing, academic expectations, and levels of tutoring support) and the social climate (e.g., availability of clubs/organizations and making new friends) of the campus (Dougherty, 2001; Nora, 1993; Pascarella & Terenzini, 1991; Tobolowsky & Cox, 2012).

Part of the challenge in understanding these differential outcomes in baccalaureate attainment based on college origin is the wide array of enrollment pathways that students beginning at a two-year college might take in pursuit of a baccalaureate degree. De los Santos and Wright (1990) use the terms "student swirl" and "double-dipping" to describe the nonlinear back-and-forth paths (e.g., two-year college to four-year, two-year to two-year college) that some students take as they work towards a baccalaureate degree. Adelman (2006), using longitudinal data, confirmed that students who swirl are 17% less likely to obtain a baccalaureate degree than students who formally transfer. These multiple patterns of enrollment also add to college costs, time-to-degree, and reduce the quality of course offerings (Townsend, 2001).

In terms of another possible pathway, Lorenzo (2005) questioned whether offering baccalaureate degrees on two-year campuses would improve student transfer, persistence, and baccalaureate achievement. This pathway could be more efficient for students and would preclude their having to adjust to a new campus environment. This type of college has been

called a "hybrid college" (Floyd & Skolnik, 2005; Lorenzo, 2005). At hybrid colleges students can complete a one-year certificate, a two-year associate's degree, and/or a four-year bachelor's degree at the same campus, or still have the option transfer to another college. Some of the main reasons why two-year colleges have offered baccalaureate degrees have been to help the local community meet economic needs (Walker, 2002), to enhance the institution's reputation and prestige, to address a perceived market demand for specific baccalaureate programs of study, and to meet enrollment growth goals (Cohen, 2002; Cook, 2000; Walker, 2002). This latter factor is particularly salient as public funding for many two-year institutions has been in decline (Cohen, 2002; Dougherty & Kienzl, 2006; Walker, 2002). Over the past 25 years, many two-year colleges have grown into hybrid colleges. From 1987 to 2007 at the hybrid colleges referenced in this dissertation, associate's degree attainment increased incrementally (from 21,222 to 25,651); however, during this same time period, these hybrid institutions more than doubled their baccalaureate degree awards (from 19,077 to 42,221) (U.S. Department of Education, 2010). The preliminary evidence of baccalaureate degree attainment for students at hybrid colleges over the past 20 years is promising; however there still remain little or no studies analyzing their effectiveness in reducing transfer and improving baccalaureate attainment.

It is important to learn more about the outcomes of students who move through postsecondary education in nontraditional ways, not only because these students are needed to meet societal workforce demands, but also because of society's moral obligation to serve the disproportionally large number of underrepresented (low-income, students of color, first-generation, and nontraditional) students that start at two-year colleges (Horn & Nevill, 2006; Horn, Peter, & Rooney, 2002; Provasnik & Planty, 2008). These students often have less access

to and understanding of college due to their personal and family educational circumstances (Cabrera & La Nasa, 2000a; McDonough, 1997).

A number of factors may play a role in a student's departure-without-completion from college. See Table 1.

Table 1

College Student Departure-Without-Completion Reasons

Reason for departure	References
Finances	Cabrera, Nora, & Castañeda, 1992; Dougherty & Kienzl, 2006
Student institutional commitment	Braxton, Milem, & Sullivan, 2000; Tinto, 1993
Family background differences and demands	Arbona & Nora, 2007; Attewell, Lavin, Domina, & Levey, 2006
Academic ability	Dougherty, 2001; Sandy et al., 2006
Student attributes and intentions	Brint & Karabel, 1989; Dougherty, 2001; Okun, Benin, & Brandt-Williams, 1996
Academic and social integration	Braxton, 2002; Tinto, 1993
Structural characteristics of colleges	Arnold, 2003; Astin, 1993
Campus environment	Astin, 1993; Kuh, Kinzie, Schuh, Whitt, & Associates, 2005
Racial climate	Hernandez, 2000; Hernandez & Lopez, 2004; Nora & Rendon, 1996
Faculty-student interactions	Astin, 1993; Kuh & Hu, 2001; Tinto, 1993

There is a moral imperative to further understand the differences in baccalaureate attainment between attending two-year and four-year colleges as socioeconomic status often drives the decision about where to begin college, even for those having the highest levels of academic preparation (Cabrera, La Nasa, & Burkum, 2001). Dougherty and Kienzl (2006), using

data from the Beginning Postsecondary Students (BPS) Longitudinal Study on 653 students (NCES, 2008a) and the National Education Longitudinal Study (NELS) of 1988 on 2660 students (NCES, 2008b), from the National Center for Educational Statistics (NCES) sought to understand the likelihood of transfer from two-year, or community, to four-year baccalaureate colleges and how that was affected by such characteristics as socioeconomic background, race/ethnicity, gender, and first-generation status, along with precollege academic characteristics, external demands at college entrance, and experiences during college. Their analysis was the general concept of which this dissertation adopted however, whereas it only looked at two-year students and transfer, this study looked at a smaller subgroup of transfer and baccalaureate attainment, comparing two-year to hybrid college attendance. Dougherty and Kienzl (2006) found that higher-socioeconomic-status undergraduates had transfer rates that were significantly greater than their counterparts and were partially attributable to having stronger academic backgrounds, and higher academic aspirations, not having children, being enrolled full-time, having an academic major, and having more cultural capital (Dougherty & Kienzl, 2006).

The concept of cultural capital, posited by Bourdieu (1973), is relevant to this study as families powerfully influence their members through socialization, which affects language, cultural awareness, artistic and literary appreciation, personal presentation, and, specific to this study, differences in outcomes due to college selection (Arnold, 2003; Bourdieu, 1973; St. John, Paulsen, & Carter, 2005).

Community college attendance costs are significantly less than those of public four-year colleges (Cohen, 2003), and student decisions about whether and where to attend college have been linked to perceived costs (Cabrera & La Nasa, 2000c; Kane, 1995). For example, first-generation students face hindrances in completion and tend to be from lower socioeconomic

levels (Chen, 2005; Choy, 2001). [2] They are more likely to begin their college education at the two-year level, and are less likely to obtain college degrees than those with a parent who attended college (Chen, 2005; Choy, 2001; Leigh & Gill, 2004; Lohfink & Paulsen, 2005). They tend to be less prepared for college, have time delays in enrollment, transfer less, and work while attending college more than those who had at least one parent who attended college (Cabrera et al., 2001; Chen, 2005; Clements, 2002; Horn & Nunez, 2000). Additionally, the majority of Black, Hispanic, and Native American/Alaskan native students begin college at the two-year level (Clements, 2002; Horn & Nevill, 2006; Horn et al., 2002; Laanan, 2000) where baccalaureate completion is less likely than it is for similar students who begin at four-year colleges, even when controlling for degree aspirations (Alfonso, 2006). Single parents face difficulties that hinder their degree completion as they also tend to come from families with lower earnings, tend to be older, begin college more often at the two-year level, and are less likely to complete any type of college degree than those who are not single parents (Bowen, Kurzweil, Tobin, & Pichler, 2005; Dougherty & Kienzl, 2006; Taniguchi & Kaufman, 2007).

Consequently, this investigative study may show the need for future research in relation to hybrid colleges as they may be a potential organizational structure that could enhance student

[2] In this study and other studies using the National Center for Educational Statistics data, first-generation students are those who are the first to attend college from their family (Chen, 2005; Choy, 2001; Horn & Nunez, 2000; Lohfink & Paulsen, 2005; Nunez & Cuccaro-Alamin, 1998; U.S. Department of Education, 2001a). Chen (2005) separates the data into three categories—first-generation, parents with some college, and parents with a bachelor's degree—and provides outcomes on all three. However, Federal TRIO programs define first-generation as parents having some or no college but neither family member had obtained a baccalaureate degree (Engle & Tinto, 2008).

progress, particularly for under-represented students to baccalaureate attainment, the key to short-term and long-term individual and societal benefits.

Statement of the Problem

Since the 1960s two-year colleges have seen their enrollments grow at a much higher rate than those of four-year colleges; yet the baccalaureate attainment level has not grown or kept the same pace (Sandy et al., 2006). Over 40% of those who attend college begin at the two-year level instead of starting at a four-year college (Horn & Nevill, 2006; Horn et al., 2002; Provasnik & Planty, 2008; U.S. Department of Education, 2001b). A disproportionately higher number of lower-socioeconomic-status students, Blacks, Hispanics, Native American/Alaskans, single parents, first-generation students, and nontraditional students tend to start their education at the two-year level (Dougherty & Kienzl, 2006; Horn & Nevill, 2006; Horn et al., 2002; Provasnik & Planty, 2008; Roderick, Nagaoka, Coca, & Moeller, 2008). However, baccalaureate completion for these students is much less likely than for those who begin at a four-year college (Clements, 2002; Horn & Nevill, 2006; Laanan, 2000; Provasnik & Planty, 2008; Surette, 2001). Students who transfer have significantly lower retention and degree attainment rates than those who begin at four-year campuses (Ishitani, 2008; Porter, 1999; U.S. Department of Education, 2003).

These differential outcomes reflect systemic inequities in our postsecondary educational system. The evidence of the differences in attainment and patterns of student success makes it apparent that the current system is not working, and new structures or reconfiguration of current ones are in order. The possibility of obtaining a baccalaureate degree is not the same for all students, even if they are equally qualified (Dougherty & Kienzl, 2006; Leigh & Gill, 2004; Provasnik & Planty, 2008; Stephan et al., 2009). Given the importance of baccalaureate degree attainment for individuals' standard of living and for a society's economic well-being and the

disparities of degree attainment for underrepresented students, the as-yet-unstudied hybrid college pathway deserves further investigation. Roksa (2006) agreed, arguing that "examining the relationship between the structure of two-year systems and students' educational attainment thus merits future consideration" (p. 520). Considering the fact that in the past 25 years baccalaureate degree graduates at the hybrid colleges found in this study have more than doubled (U.S. Department of Education, 2010), as noted earlier, studies focused on this educational pathway seem long overdue. This study examines one aspect of the relationship between college structure and student transfer and baccalaureate rates, namely, the influence of beginning higher education at a hybrid versus a two-year college.

Purpose and Overview of this Study

This exploratory study was designed to examine how beginning at a hybrid, as compared to a two-year college, affected transfer and baccalaureate attainment. Additionally, it was intended to determine how social background, other precollege personal characteristics, external demands as students enter college, and experiences during college affected transfer rates and baccalaureate attainment in the same manner as Dougherty and Kienzl (2006) and as commonly controlled for in literature (Flowers, 2006; Pascarella & Terenzini, 1991; Plank & Jordan, 2001; Provasnik & Planty, 2008; Roksa, 2010; Strauss & Volkwein, 2004). Literature has shown that these variables "need to be controlled in order to allow a valid comparison of the effects of community colleges and four-year colleges apart from the influence of student backgrounds, aptitudes, and aspirations" (Dougherty, 1992, p. 189). This dissertation was to determine the efficacy of beginning at a hybrid college that offered baccalaureate degrees while retaining its subbaccalaureate mission of associate degrees and certificates.

Research questions. Initially, I sought to understand within college transfer rates for those who began at a hybrid college as compared to external transfer rates for those who began at a two-year or community college in relation to transfer and baccalaureate attainment. The original research questions that were approved by the dissertation committee in May 2012 follow:

1. How does transferring *within* a hybrid college that offers subbaccalaureate and baccalaureate degrees differ, in relation to transfer rates and baccalaureate attainment, from transferring out from a two-year college to a four-year college?
2. To what degree do race, gender, age, parents' higher education level, and parents' socioeconomic status (SES) affect transfer status and baccalaureate attainment for those who transfer *within* a hybrid college that offers subbaccalaureate degrees versus those who transfer out from a two-year college?
3. How do other precollege personal characteristics (high school preparation and college aspirations), external demands as students enter college (marriage, children, work intensity, and full-time enrollment), and experiences during college (whether major was academic or vocational, academic integration, and social integration) affect transfer status and baccalaureate attainment for those who transfer *within* a college versus those who transfer out to obtain their baccalaureate?

Prior to obtaining the two databases that were used for this study, the BPS Longitudinal Study (NCES, 2008a) and the NELS of 1988 (NCES, 2008b), from the NCES, I analyzed the literature and identified what was missing in order to frame the research questions, using three data sources - Dougherty and Kienzl (2006), the BPS (NCES, 2008a), and the NELS (NCES,

2008b) - to determine the impact of hybrid colleges as a factor in transfer and baccalaureate attainment rates.

The BPS was a longitudinal study initially drawn from the National Postsecondary Student Aid Study (NPSAS), which tracked a number of cohorts of students who had started their college education for the first time regardless of their age. These students were initially surveyed through NPSAS in 1990 and then followed up on two and five years after enrolling in college. The intent was to gather information about how they paid for college, their undergraduate experiences, persistence in school, degree completion, and employment following enrollment (NCES, 2008a).

NELS was a national longitudinal study that began to track eighth-grade youth starting in the spring of 1988. These students were again surveyed in 1990 when most of them were high school sophomores, in 1992 when many were high school seniors, in 1994 when they were college sophomores, and in 2000 when those who graduated would have been two to four years out of college. Respondents were asked about a variety of subjects relating to home life, school, educational opportunities, aspirations, extracurricular activities, habits, postsecondary education, and educational attainment (NCES, 2008b).

Based on examining research studies using these databases (Adelman, 2006; Alfonso, 2006; Arbona & Nora, 2007; Berkner, Cucaro-Alamin, McCormick, & Bobbitt, 1996; Carter, 1999; Dougherty, 1991, 1992, 1994; Dougherty & Kienzl, 2006; Dowd & Melguizo, 2008; Hoachlander, Sikora, Horn, & Carroll, 2003; Kojaku & Nunez, 1998; McCormick, 1997; NCES, 2008a, 2008b, 2011a, 2011b; Nunez & Cuccaro-Alamin, 1998; Provasnik & Planty, 2008; Roksa, 2006; U.S. Department of Education, 2001a, 2001b), and prior to receiving the BPS and NELS databases myself, I believed that transfer and baccalaureate attainment resulting from

internal transfers at hybrid colleges could be tracked and compared to external transfers at two-year colleges. An internal transfer is a student who started in a certificate or associate's degree program and transferred into a baccalaureate degree program while staying at the same college.

After my dissertation proposal was accepted and upon receiving the BPS and NELS restricted-use databases, I found that it was not possible to use them to track internal transfers at hybrid colleges because the databases only referenced external transfers or transfers out to another college. In consultation with my dissertation committee and with their approval, I modified my study. It was also decided to break up the third question into three separate questions. These are my *final research questions*:

1. How does *beginning* at a hybrid college that offers subbaccalaureate and baccalaureate degrees differ from *beginning* at a two-year college in relation to transfer rates and baccalaureate attainment?

2. Controlling for social background variables (first college attended, race, gender, age, parents' higher education level, and parents' socioeconomic status - SES), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

3. Controlling for other precollege personal characteristics (first college attended, high school degree or equivalent, remedial math, remedial reading, remedial study skills, remedial writing, education expectations of a bachelor's degree or higher, and above average academic ability as compared to others), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

4. Controlling for external demands as students enter college (first college attended, married, children, single parent, and work categories), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

5. Controlling for experiences during college (first college attended, students attendance status, whether major was academic or vocational, GPA – A's and B's, academic integration, and social integration), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

Research questions Two through Five ensure that students' background and experiences during college were similar for those who began at hybrid (treatment) versus two-year (control) colleges by controlling for any differences.

Study Description

This investigative study assumed a quasiexperimental design with an ex post facto, causal-comparative case control analysis (Sprinthall, 2003). Using data from the Beginning Postsecondary Students (BPS) Longitudinal Study (NCES, 2008a) and the National Education Longitudinal Study (NELS) of 1988 (NCES, 2008b), I drew data from 60 hybrid or treatment colleges and 469 two-year or control colleges where students had begun their post-secondary education. The treatment groups consisted of 149 students from the BPS dataset and 230 students from the NELS dataset. The control groups had 1,168 students from the BPS dataset and 2,354 students from the NELS dataset.

I used descriptive statistics and chi-square analyses to understand the differences between the treatment group and the control group in relation to transfer and baccalaureate attainment.

Additionally, I used Pearson correlation and bivariate analysis via logistic regression to further understand transfer and baccalaureate attainment overall by controlling for students' background characteristics in the same sub-group manner as Dougherty and Kienzl (2006) of social background, other precollege personal characteristics, external demands as students enter college, and experiences during college (Dougherty & Kienzl, 2006; Flowers, 2006; Keith, 2006; Leech, Barrett, & Morgan George, 2008; Pascarella & Terenzini, 1991; Sprinthall, 2003; Strauss & Volkwein, 2004). Such student characteristics and involvement-in-college-activities independent variables are commonly found in the literature and are typically controlled for in an effort to further explain transfer and baccalaureate outcomes (Dougherty & Kienzl, 2006; Flowers, 2006; Pascarella & Terenzini, 1991; Strauss & Volkwein, 2004).

The BPS dataset yielded data on transfer and overall baccalaureate degree earned from first college attended, first and second college attended and then for overall college attainments while controlling for the student background characteristics. The dependent variable of transfer and specific progression toward obtaining certificates, associate's, and bachelor's degrees were *only* found in the BPS database. The NELS transfer data and degree progression were contained in transcript files that I could not readily access.

From the NELS database I obtained the dependent variable of overall baccalaureate degree earned, and then controlled for the student background characteristics. For this study the NELS data only provided baccalaureate attainment overall.

Significance of the Study

Compelling evidence exists about the benefits of bachelor's degree attainment for individuals and society (Baum et al., 2010; Grubb, 1997; Kuh et al., 2008; Surette, 2001). Quality of life factors beyond earnings are also positively affected, such as job benefits, health

care, personal fitness, children's health, children's school readiness, and community involvement (Baum et al., 2010; Kuh et al., 2008). These benefits must become available for all segments of our population, not just those privileged students who tend to be mostly White and begin at four-year colleges (Dougherty & Kienzl, 2006; Leigh & Gill, 2004; Provasnik & Planty, 2008). Hybrid colleges may provide a new option for expanding bachelor's degree attainment, particularly for the underrepresented segments of society.

The resulting dissertation contributes to the scant but growing body of research that examines nontraditional postsecondary pathways and organizational structures such as transfer, swirling, two-year, or four-year colleges that may influence student progress. Hybrid colleges may prove to be viable options for reducing barriers experienced by significant numbers of college students. This exploratory study compared transfer and baccalaureate attainment rates for students who began at hybrid colleges with rates for those who began at two-year colleges, additionally controlling for the confounding issues of social background, other precollege personal characteristics, external demands as students enter college, and experiences during college (Dougherty & Kienzl, 2006). This exploratory study may provide additional educational pathways in improving baccalaureate attainment.

Organization of the Dissertation

This dissertation is presented in five chapters. Chapter 2 reviewed in-depth the literature related to the benefits of baccalaureate degree attainment, college origins, two-year and four-year college differences, multiple enrollment patterns, hybrid colleges, and the moral imperative to understand multiple pathways. Chapter 3 reported on the methodology, the research questions and hypothesis, the research data, design and procedures, and the limitations of the study. Chapter 4 detailed the findings on student transfer rates, then on baccalaureate attainment in

relation to hybrid versus two-year college attendance. It employs descriptive statistics, chi-squared, Pearson correlation, and logistic regression methods. Lastly, Chapter 5 summarizes the findings related to each research question, illuminating distinct differences between students who started at hybrids as compared to two-year colleges in relation to transfer and baccalaureate attainment. Chapter 5 further discussed implications for further research, limitations, and conclusions.

Chapter 2

The following literature review provides an overview of research relating to a number of areas that are directly and indirectly related to the differences between two-year and four-year college student attendance. This study was focused on transfer, baccalaureate attainment, and some unconventional college pathways and organizational structures that may help or hinder student progress and persistence. As a relatively unstudied area or origin within higher education, hybrid colleges, as one of these pathways, may reduce some of the structural barriers, access differences, and the degree attainment disparities that limit certain populations from obtaining baccalaureate degrees. Given that the number of baccalaureate graduates who took that path has doubled over the past 20 years as presented in this dissertation (U.S. Department of Education, 2001b), and that this phenomenon has been underinvestigated, this study may help fill a gap in the literature. Based on an extensive evaluation of literature this review presented issues linked to transfer, baccalaureate attainment, and two-year and four-year student success relating to (a) the role of higher education and benefits of obtaining a baccalaureate degree; (b) college origins; (c) differences between two-year and four-year college attendance and the challenges that two-year students face; (d) differing enrollment pathways; (e) the evolution of two-year to hybrid colleges; and (f) the moral imperative to understand educational inequities. The chapter concludes with (g) a summary of the literature and an introduction of the independent variables that are used in this study.

Benefits of Baccalaureate Degree Attainment

Bachelor's degree graduates and the communities that they live in have been shown to enjoy higher earnings, improved employment opportunities, increased job satisfaction, a greater preponderance of pensions, more health insurance, a lower incidence of smoking, more exercise,

lower rates of obesity, improved school readiness for their families, more parental involvement in the children's activities, increased tax revenue, higher amounts of community volunteering, and higher rates of voting (Baum et al., 2010; Kuh et al., 2008).

Based on data from the National Educational 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, Alfonso (2006) concluded that students attending two-year colleges significantly reduced their likelihood of attaining a baccalaureate, compared with students attending four-year colleges. This conclusion holds true even after controlling for differing pathways (interrupting attendance, part-time enrollment, increased remedial coursework, and delayed starting); baccalaureate expectations; and the predicted probability of students' selecting two-year colleges. Students who begin at two-year versus four-year colleges face additional difficulties such as structural inhibitors, cooling of aspirations, and transitional traumas created by these colleges, which will be discussed later in this chapter.

Whereas certificate and associate's degree completion do improve labor market returns over high school graduation, these returns are not as high as those of baccalaureate degree completion (Baum et al., 2010; Pascarella, 1999). Generally, these financial returns are incremental by degree earned and not by college years completed (Grubb, 1997). However, the relatively small number of two-year-degree graduates who do overcome the obstacles of attending two-year colleges, then transfer and complete a four-year degree have been shown to face no long-term labor market negative outcomes compared to those who just attend a four-year campus (Pierson, Wolniak, Pascarella, & Flowers, 2003; Whitaker & Pascarella, 1994).

The College Board sponsored a comprehensive review by Baum, Ma, and Payea (2010) of economic returns related to degree attainment. Data gathered from the National Center for

Educational Statistics (NCES), the U.S. Census Bureau, the National Center for Health Statistics, the U.S. Bureau of Labor Statistics, the National Opinion Research Center, the Economic Policy Institute, the Kaiser Commission, the Centers for Disease Control and Prevention, the Organisation for Economic Co-operation and Development 2009, and numerous authors, presented the benefits to individuals and society of obtaining a higher education and specifically a baccalaureate degree. Those who obtained a bachelor's degree in 2008 earned on average almost $22,000 per year more than high school graduates and had unemployment rates almost three times lower. Based on these data, lifetime earnings for bachelor's degree graduates will likely be 66% more than earnings for high school graduates. Women bachelor's degree holders in 2008 had average incomes that were 79% higher than those with only high school diplomas, reflecting an increase of 19% from the 1990s (Baum et al., 2010). The comprehensive review, however, came with a cautionary warning concerning the uneven participation rates for underrepresented students that did not have the same college access and graduation completion rates therefore presenting a greater impact on these students because of the differences.

College Origins Matter in Gaining Access and Obtaining the Baccalaureate Degree

Where a student begins college can be influenced by family backgrounds, cultural and social capital, prior exposure to college, and family economics. Some students are aware of numerous choices - two-year, four-year, public, private, selective, expensive, local, or residential - as a result of their backgrounds, exposure to colleges, and prior experiences; whereas other students may not realize the range of choices or even understand the importance of attending college (Bourdieu, 1973; Cabrera & La Nasa, 2000b, 2000c; Carter, 1999; Hartle, 1998; McDonough, 1997; McPherson & Schapiro, 1999; Plank & Jordan, 2001; St. John et al., 2005). A number of students each year struggle with the process of enrolling at four-year colleges and

end up selecting colleges for which they significantly exceed the admission requirements (Roderick et al., 2008).

Utilizing NELS data, Stephan et al. (2009) examined students' selection of college (public four-year, private two-year, and public two-year) and the effects these colleges had on degree attainment (any degree of associate's or higher, bachelor's degree or higher, and any degree or still enrolled) and confirmed that upper and middle SES students tend to use deliberate and systematic procedures to evaluate costs and benefits during the college selection process. Whereas those selecting two-year colleges, both public or private, tend to rely on limited or incorrect information, word of mouth, and unsystematic procedures (Rosenbaum, Deil-Amen, & Person, 2007; Stephan et al., 2009). In addition, Stephan et al. (2009) found comparable students had different attainment outcomes at different types of colleges (public four-year, private two-year, and public two-year). Where a student begins college can play a significant role in whether a student graduates, as retention and graduation rates are higher for those who attend more selective colleges and are also improved for those who attend four-year instead of two-year colleges (Alfonso, 2006; Dougherty & Kienzl, 2006; McPherson & Schapiro, 1999; Provasnik & Planty, 2008; Stephan et al., 2009).

Women-only colleges. Some students gain attainment advantages by beginning at certain population-specific colleges. For example, students who went to women-only colleges have tended to become scientists, obtain PhDs, and enroll in medical schools at higher rates than similar students from a coeducational settings (Fuller, 1986; Tidball, 1985; Tidball et al., 1999). Tidball (1986), using data from the Doctorate Records File for 1970–1979 from the NCES, found that there was a direct correlation "between the number of women faculty and the number of women students proceeding to the doctorate [which] reconfirms the importance of women

faculty to women students outcomes" (p. 619). The availability of more female mentors and faculty results in more opportunities to discuss issues outside the classroom; and it has been suggested as one of the advantages of women's colleges over coeducational colleges (Kinzie, Thomas, Palmer, Umbach, & Kuh, 2007; Miller-Bernal, 1993).

Utilizing data from the Survey of Earn Doctorates women's colleges produce more bachelor's degrees in biology, chemistry and physics (Sharpe & Fuller, 1995), and physical sciences doctorates in science, technology, engineering, and math (STEM) professions, (Farrington, 2007) than coeducational colleges. Utilizing longitudinal data from the Cooperative Institutional Research Program on more than 200 four-year colleges in a national sample, Astin (1993) found that, after controlling for a variety of background characteristics including socioeconomic status and college selectivity, women's colleges had positive effects on critical thinking, intellectual growth, cultural sensitivity, writing skills, and baccalaureate completion as compared to coeducational colleges.

In a meta-analysis of prior work, Pascarella and Terenzini (1991) concluded that the advantages of attending women's and historically Black colleges and universities (HBCU), in terms of overall value and student attitude changes, have been ignored in the literature. Though some studies claim that the apparent advantage gained by attending women-only colleges may be due to selection bias (Pascarella & Terenzini, 1991; Stoecker & Pascarella, 1991), more recent research has taken into account these concerns by controlling for student characteristics and collegiate selectivity (Astin, 1993; Riordan, 1994; Wolf-Wendel et al., 2000).

Riordan (1994) compared 125 attendees of women-only colleges to 1,832 coeducational students during a six-year period, using data taken from the National Longitudinal Study of the High School. Riordan (1994) found that, for each year of attendance at a women's college, there

was a significant increase in occupational stature and yearly income. Further, she found that students who attended a women-only college for just one year ultimately achieved more postsecondary education than those who did not. The incremental effect of each year of attendance at a women-only college suggests that the educational climate conditions at the women-only colleges exerted some measure of continued success for each year students attended college. These incremental effects could be relevant to hybrid colleges if attendance at hybrid colleges demonstrates gains in baccalaureate attainment versus attending community colleges.

Historically Black colleges and universities. Another example of the importance of where students begin college is that of historically Black colleges and universities (HBCUs). HBCUs tend to produce higher proportions of Black doctors, lawyers, political leaders, and PhD recipients than historically White colleges and universities (HWCUs) (Jackson, 2002; Ross, 1998; Wolf-Wendel et al., 2000).

Research from the 1980s and 1990s exemplified that attendees of HBCUs had higher retention and baccalaureate attainment than their counterparts who attended HWCUs (Allen, 1992; Astin, 1993; Ehrenberg & Rothstein, 1993; Pascarella, Smart, Ethington, & Nettles, 1987). Allen (1992) utilizing data from the National Study on Black College Students compared more than 2500 Black student college experiences while attending either eight predominately White public universities versus eight historically Black public universities. Bivariate, correlation, and multiple regression were used to understand the relationship between academic achievement, social involvement, and occupational aspirations against five predictor variables (Student educational background factors, student aspirations, student demographics, personal adjustments, and environmental factors). Allen (1992) concluded that Black students who attended historically Black universities reported better academic performance, greater social involvement, and higher

occupational aspirations than similar students who attended predominantly White universities. This study further asserted that higher college grade point averages and overall college completion is "affected by the quality of life at the institution, the level of academic competition, university rules/procedures/resources, racial relations on the campus, relationships with faculty and friends, and the extent of social support networks on campus" (Allen, 1992, p. 40).

Ehrenberg and Rothstein (1993) using data from the National Longitudinal Study of the High School Class of 1972 reported on 638 Black students who attended either a Historically Black Institution (HBI) (47%) or other institutions (53%) between 1972-1979. This study used logistic regression and accounted for a number of student background characteristics, pre-college conditions, and college characteristics. This study found that students who attended HBI's as compared to those who attended other institutions had lower mean SAT scores, poorer high school rankings, lower family incomes, lower percentages of parents who had earned a baccalaureate degree, were more likely to attend a public high school, and have a higher number of Black high school classmates and teachers. The HBI's these students attended had lower overall first-year SAT scores and had collegiate expenditures that were lower than those attending other institutions. In spite of these critical differences this study concluded that Black students who attended HBI's had a substantially increased probability of obtaining a baccalaureate degree (between 9 and 29 percent) than the Black students who attended other institutions.

Kim and Conrad's (2006) more recent hierarchical linear and nonlinear modeling study analyzed a longitudinal dataset from Cooperative Institutional Research Program (CIRP) of 941 African American freshmen who first enrolled in the fall of 1985. They followed up nine years later to determine the degree completion rates of African American students and found no

differences in baccalaureate attainment between students who attended HBCUs and HWCUs. They posited that this could be due to Black students becoming accustomed to HWCUs and that these colleges "have had some success in addressing the chilly and discriminatory climate often associated with them" (p. 419). This study has two significant limitations; a) potential nonrepresentative data due to the small sample size and; b) oversampling of students at HBCU's, and a potential response bias with higher responses from self selecting graduates.

Using a nationally generalizable sample of 687 students at historically Black colleges and universities (HBCUs) and 742 students at historically White institutions (HWCUs), Wenglinsky (1996) found that HBCU students reported significantly greater interest in and pursuit of graduate education and educational aspirations than similar Black students at predominantly White institutions or similar White students at HBCUs.

With conflicting results in relation to attainment differences for those starting at HBCU versus HWI due to reported selection bias one may question if climates have actually changed, or further research is needed before discounting the impact of the HBCU environment assisting Black students in obtaining their baccalaureate (ASHE Higher Education Report, 2010). Whether or not differences in attainment for those starting at and attending HBCUs and HWCUs remain today, the past reported success of baccalaureate attainment for Black students at HBCUs does provide insight into baccalaureate origins of where a student begins college as an important factor in baccalaureate attainment.

Lens of baccalaureate origins. Many studies of both women-only and HBCU, including the examples previously discussed (Kim & Conrad, 2006; Miller-Bernal, 1993; Riordan, 1994; Sharpe & Fuller, 1995; Tidball, 1985, 1986; Tidball et al., 1999; Wolf-Wendel et al., 2000), used a methodological and theoretical lens called *baccalaureate origins*, established for men by

Knapp and Goodrich (1952) and later modified for all students by Tidball (1974). The lens of baccalaureate origins tracked doctoral success to where the individual students completed the undergraduate studies and received their baccalaureate degree (Tidball, 1986). Knapp and Goodrich (1952) and Tidball (1974) found that student experiences at small, private, liberal arts colleges created environments that were particularly productive of baccalaureate degrees for men who later earned their doctorates.

Regarding women and the lens of baccalaureate origins, Tidball (1974) found that about 50% of the most productive doctorate recipients baccalaureate origin colleges were women-only colleges (Tidball, 1986). Wolf-Wendel (2000) illustrated that, when controlling for undergraduate college differences, whereas baccalaureate college selectivity and institutional resources predicted doctoral success for White women, this was not the case for Black and Latina women. Wolf-Wendel (2000) demonstrated that HBCUs and HSIs as the baccalaureate origin were particularly effective in producing doctoral graduates regardless of resources and selectivity due to having "a focused mission dedicated to serving a specific population of students" (p. 180).

Fundamental to the baccalaureate origins lens is that the college constructs an educational environment to promote student success via resources, selectivity, size, mission, and population (such as women-only, HBCU, and HSI). This type of educational environment has been evaluated with outcome measures such as retention, baccalaureate attainment, occupational stature, yearly income, and acquisition of graduate degrees (Miller-Bernal, 1993; Stoecker & Pascarella, 1991; Tidball et al., 1999; Wolf-Wendel et al., 2000). Critiques of the baccalaureate-origins lens tend to counter that the prior characteristics of the incoming students such as income, parents' education, precollege grades, and aspirations may explain the differences in

baccalaureate and doctorate success and must be controlled for in research studies (Stoecker & Pascarella, 1991; Wolf-Wendel et al., 2000).

Just as researchers have used the baccalaureate-origins lens to further understand discrepancies in doctoral attainment between underrepresented populations and White students depending on institutional type and attendance, I sought through this study to understand the influence of collegiate origins on those who obtained baccalaureate degrees but who began at either a two-year or a hybrid college.

Two-year and Four-year College Baccalaureate Attainment Differences

As the number of students starting their academic studies at two-year colleges has grown, research has focused on student success, retention, and attainment of the baccalaureate degree (Adelman, 2006; Bailey, Calcagno, Jenkins, Kienzl, & Leinbach, 2005; Horn & Nevill, 2006; Ishitani, 2008; Kuh, Kinzie, Schuh, Whitt, & Associates, 2005; Laanan, 2000). For many individuals beginning their postsecondary pursuits, a two-year or community college is the only affordable route to higher education, future employment, and the hope of increased sustained economic viability (Kuh et al., 2008; The Higher Learning Commission, 2001). Since nearly one-third of all college students in the United States are transfer students, and 45% of all baccalaureate degrees are awarded to students who have transferred from two-year or community colleges (Hoover, 2007; Monaghan & Attewell, 2014; National Association for College Admission Counseling, 2010), it is important to understand patterns of college origin, issues surrounding transfer, and baccalaureate attainment.

Almost 50% of students who begin at a four-year college end up departing within six years before completing a degree (Berkner et al., 1996; Kuh et al., 2008). Those who begin at a two-year college with baccalaureate aspirations and therefore need to transfer out are even less

likely (30% lower) to obtain a bachelor's degree than those who begin at a four-year college (Alfonso, 2006; Lorenzo, 2005; Pascarella, 1997; U.S. Department of Education, 2001b). Even more troubling is that those who are underrepresented (Blacks, Hispanics, Native American/Alaskans, single parents, first-generation students, and nontraditional students) are even less likely than their counterparts (White students, those without children, who are not first-generation, and traditional aged) to complete their bachelor's degree whether they begin at a four-year or a two-year college (Alfonso, 2006; Chen, 2005; Flowers, 2006; Harvey, 2003; Provasnik & Planty, 2008). With declining budgets, several states have eliminated or reduced developmental courses at the public four-year level and have redirected students to two-year colleges as a starting point, requiring these students to transfer if they wish to pursue a baccalaureate degree (Bettinger & Long, 2004; Leigh & Gill, 2004; Soliday, 2002).

Students that begin at two-year colleges who desire to obtain a baccalaureate degree, or those who switch schools for other reasons often face additional difficulties in baccalaureate completion (Adelman, 2006; Cohen, 2003; Dougherty & Kienzl, 2006; Dowd & Melguizo, 2008; Tobolowsky & Cox, 2012). These additional difficulties have been described as cooling of aspirations, structural inhibitors, or transitional trauma, and transfer shock.

Cooling out of aspirations. Studies have shown that those who attend two-year colleges who wish to earn a baccalaureate degree have another disadvantage that those who start at four-year colleges (Alfonso, 2006). The phenomenon has been described as a two-year cooling-out process, in which programs of study, faculty and student peers, and policies of two-year colleges influence students in ways that significantly lower their precollege degree expectations, a contributing factor of why these students transfer less than expected (Clark, 1980; Hellmich, 1993; Pascarella et al., 1998; Pierson et al., 2003). A high percentage of those who enter a two-

year or community college have higher than likely baccalaureate attainment goals: using NELS (1988) 63% of those who entered in 1992 (Hoachlander et al., 2003) and, using the BPS Longitudinal Study (1996), 78% of those who entered in 1995 reported having aspirations to attain a baccalaureate degree (Kojaku & Nunez, 1998), however, data from National Longitudinal Study of the High School Class of 1972 and the National Longitudinal Study of Youth showed that less than 40% of those intending to transfer actually transferred to a four-year institution (Brint & Karabel, 1989; McCormick, 1997; Surette, 2001).

Pascarella et al. (1998) used nationally generalizable data from the National Center for Educational Statistics Integrated Postsecondary Educational Data System relating to 1,645 students from 18 four-year and five two-year colleges who participated in the National Study of Student Learning (NSSL) and found that students attending two-year colleges who would be required to transfer in order to pursue a baccalaureate were between 20% and 31% more likely than students attending four-year campuses to lower their lifetime educational aspirations below the bachelor's degree (to cool out) after the second year. This percentage existed even after controlling for precollege educational aspirations, aptitude, academic drive, personal characteristics, the number of credits completed, work status, grade point averages, and the type of coursework taken (Pascarella et al., 1998).

Hellmich (1993), utilized data from a comprehensive community college from 199 students who intended to earn the transfer related associate of arts degree and were placed in one or more college preparatory courses. This study intended to determine if the cooling out process limited access to the transfer degree to particular populations by controlling for race, SES, gender, academic ability and age. Overall 21.1% of the study participants were cooled out by moving out of the transfer associate degree into a terminal associate degree. The authors

concluded that this was due to the college environment versus deficiencies in students abilities or backgrounds as they were controlled for (Hellmich, 1993). Whereas this study concluded that race, SES, gender, and academic ability were not significantly related to students being cooled out, it did show that as age increased the probability of being cooled out increased.

Additionally, two-year students have been shown to be as much as 19% less likely[3] to receive a bachelor's degree in the same amount of time as similar students who started at a four-year college. These findings were after controlling for academic ability, degree aspirations, precollege and college grades, hours working, and family backgrounds-due to transfer-related issues and cooling out of aspirations (Dougherty, 2001; Lavin & Crook, 1990; Pascarella & Terenzini, 1991; Pierson et al., 2003; Whitaker & Pascarella, 1994). Of those who start at a two-year college, only 40% earn any type of educational credential (certificate, associate's, or bachelor's) within five years of enrolling (Roksa, 2006) and 42% within six years (Bailey, Calcagno et al., 2005). Taking into account those who are still enrolled, an additional 48% drop out within five years without earning any credentials (Berkner et al., 1996; Roksa, 2006). Dougherty (1992) in a meta-analysis of 11 studies that utilized national longitudinal data (National Longitudinal Survey of the High School Class of 1972 and the American Council on Education yearly survey of full-time freshmen), analyzed two-year to four-year transfer rates, specifically college graduation success following transfer. Dougherty (1992) presented a comparison table showing numerous independent variables used in six of the studies that controlled for the critical independent variables that need to be accounted for to enable valid

[3] Whereas Pierson et al., (2003), Pascarella and Terenzini, (1991), and Whitaker and Pascarella (1994) found two-year students to be 15% less likely to receive the BA degree, Dougherty's (2001) findings showed between 11-19% and Lavin and Crook (1990) 19%.

comparisons. Dougherty (1992) concluded that when controlling for baccalaureate aspirations, background variables, and ability, students who entered two-year colleges were significantly less likely than (11 to 19 percent) those who started at four-year colleges to attain a bachelor's degree.

Attending a two-year college may cool out aspirations in other ways. The literature confirms that those who have expectations of acquiring a baccalaureate are more likely to obtain that degree, though starting out at a two-year college tends to negatively influence those educational expectations (Choy, 2001; Dougherty & Kienzl, 2006; Hoachlander et al., 2003; Pascarella et al., 1998; Provasnik & Planty, 2008). Studies have shown that perceived academic ability and self-efficacy, or the conviction to plan and successfully complete the goals (Bandura, 1997) can influence two-year or four-year college choice, academic performance, and overall success (Chemers, Hu, & Garcia, 2001; Chevalier, Gibbons, Thorpe, Snell, & Hoskins, 2007; Laanan, 2000; Multon, Brown, & Lent, 1991). Chemers, Hu, and Garcia (2001) surveyed 373 members of the first-year class at the University of California at Santa Cruz, used structural equation modeling, and found that academic self-efficacy was significantly and directly related to academic performance. This study found that those who start college with academic self-assurance do significantly better than those with less academic confidence (Chemers et al., 2001). Students may select a two-year college because of low self-efficacy, which becomes yet lower when their aspirations cool out (Chemers et al., 2001; Chevalier et al., 2007; Multon et al., 1991).

Structural inhibitors or transitional issues for transfer students. Dougherty describes the structural issues of being vocationally focused, associate degree granting, and primarily commuter colleges as examples of the institutional division between two-year and four-year

colleges and labels that separation as a key impediment to those needing to transfer and desiring the baccalaureate degree (Dougherty, 1991). Additionally students who need to transfer from a two-year college to obtain a baccalaureate degree face the structural and organizational challenge of physically departing one campus and moving to another (Dougherty, 1991).

Structural issues are reflected during and after being admitted, as policies can be dissimilar from one college to the next. Complications can arise in the attempt to obtain scholarships or aid; there may be differences in the admissions process, or students may not understand the procedures on the new campus for lack of advisement and established faculty or staff connections (Dougherty, 2001; Nora & Rendon, 1990). Students who transfer from a two-year college often are required to have prior courses evaluated to determine whether they are equivalent to similar four-year students' courses (Dougherty, 2001; Grubb, 1990; Nora, 1993; Nora & Rendon, 1990). This process can be problematic for students who transfer. Utilizing data on 2196 students attending 536 community colleges from the NELS:88 and IPEDS, Bailey, Calcagno, Jenkins, Kienzl, and Leinbach (2005) analyzed the students probability of completing a certificate, associate degree, or transferring to a baccalaureate college in an attempt to estimate the institutional effect (structural issues) on the outcomes while controlling for individual student characteristics. They found that as school size, part-time faculty, and underrepresented student population increased graduation rates decreased.

Becoming accustomed to a new campus can be difficult and stressful for students (Bailey, Calcagno et al., 2005; Kuh et al., 2005; Tobolowsky & Cox, 2012). Tobolowsky and Cox (2012) interviewed 17 members of the faculty and staff at a public research university with 4,500 accepted first-year students and 1,100 transfer students in 2005 who had direct involvement with transfer students or the policies that affect them. The study focused on the institutional neglect of

transfer students and on assessing the college's efforts to aid transfer students. This study concluded that the negative experiences of individual transfer students were due to structural or institutional barriers reflected in differing college policies and the campus climate. It found that faculty and staff paid less attention to the needs of transfer students than the needs of first-time students. Townsend's (1995) qualitative study examined the transfer process at nine community colleges and how students adjusted to their new environment showing barriers that they faced. She found that there was little or no student utilization of the formal resources, including orientation and transfer services; and after transferring, students struggled with increased academic rigor and the emphasis on writing. In addition, students reported feeling academically behind because, at their two-year or community college, they perceived that the standards had been lowered to meet the needs of a much greater number of underprepared students. Campuses that do exceptionally well in engaging their students and assisting them in the transfer process make it a priority to pay attention to how students navigate around the physical environment of the campus itself. They have consistent transfer admissions policies, communicate academic expectations clearly, and dispel stereotypes of transfer students, all in an effort to ease the burdens of the transfer process (Kuh et al., 2005; Tobolowsky & Cox, 2012).

Transfer students must become reestablished within the academic and social milieu of the new campus (Pascarella & Terenzini, 1991). This transition has been called social and academic adjustment (Tinto, 1993). Tinto (1993) posited that students will have a higher likelihood to persist if they are both academically and socially integrated into a campus environment. This process can be difficult as academic expectations, different levels of rigor, tutoring support, campus racial climate, available clubs and social organizations, and the challenge of making new friends can be dramatically different from one place to the next (Dougherty, 2001; Tobolowsky

& Cox, 2012). These transitional issues have considerable bearing on retention and graduation (Arbona & Nora, 2007; Arnold, 1999; Astin, 1993; Braxton, Milem, & Sullivan, 2000; Cabrera, Nora, & Castañeda, 1992; Hernandez, 2000; Kuh et al., 2008; Kuh et al., 2005; Nora, 2001; Nora & Rendon, 1996; Okun, Benin, & Brandt-Williams, 1996; Tinto, 1993).

Besides difficulties face on campus, many transfer students have transportation issues such as having an unreliable car or not having a car, unpredictable ride sharing, and poor or nonexistent mass transit (Kallison & Stader, 2012; Laden & Turner, 1995; Rankin, Katsinas, & Hardy, 2010). Rouse (1995) used data from the High School and Beyond senior cohort, consisting of 6,786 individuals, and confirmed a negative correlation to geographic proximity in two-year or four-year college attendance. Rouse (1995) found that the farther away one is from a college, the less likely they are to attend. Travel issues can be worse for those from lower economic strata who have fewer personal transportation options (Kallison & Stader, 2012; Rankin et al., 2010).

Dougherty (1991) described the difficulties faced by baccalaureate aspirants in three phases: "surviving in the community college, transferring to a four-year college, and persisting in the four-year college" (p. 316). He concluded that the two-year community college is in a calamity, requiring significant repair, and called for radical transformation. He argued that many two-year colleges should be converted into four-year colleges or be directly affiliated and linked as branch campuses where the two-year branch campus is typically physically separate from the four-year campus, but the academic programs are aligned with the same admissions policies, credit evaluation and seamless transfer to baccalaureate granting institutions. He postulated that the structural/physical separation from four-year colleges leads to difficulties for transfer

students, and the commuting that hinders their academic and social integration, will continue to limit transfer and baccalaureate attainment.

Transfer shock. Transferring to a four-year college affects attrition and overall success rates. Transfer students have significantly lower retention and graduation rates than the students who attended the four-year institution from the start (Avakian, MacKinney, & Allen, 1982; Dougherty, 1992; Ishitani, 2008; Porter, 1999; U.S. Department of Education, 2003). Students transferring from a two-year or community college may face a period of distress called transfer shock (Ishitani, 2008). Transfer shock is defined as a decline in grade point average after a student transfers from a two-year to a four-year college (Flaga, 2002), and it has been noted frequently in the literature (Cejda, 1994; Cejda, Kaylor, & Rewey, 1998; Diaz, 1992; Flaga, 2006; Hills, 1965; Ishitani, 2008; Keeley & House, 1993; Laanan, 2000; Townsend, 1995). In a meta-analysis of 62 studies, Diaz (1992) found that almost 80% of the two-year or community college students who transferred faced transfer shock, with a noted drop in GPA within the first semester. The literature indicates that transfer students earned GPAs that were between .20 and .50 points lower than their GPAs prior to transferring (Cejda et al., 1998; Gold, 1971; Keeley & House, 1993; Nolan & Hall, 1978; Webb, 1971).

Using a longitudinal perspective of 7,631 students from a four-year comprehensive university, Ishitani (2008) examined the impact of transfer shock on transfer students' retention and graduation rates. This study focused on differing semester entry points and GPAs and found that sophomore and junior transfers were less likely to depart than first-year transfers at this university. It also provided evidence that first-year native students - meaning those who started at that campus, were retained at higher rates than first-year transfers. These findings were similar to

those of the collegiate-origin starting point study by Riordan (1994), showing when students transfer during their four years of college, impacted baccalaureate attainment.

Utilizing data from the University of Iowa, transfer students are more likely than students who started at that college or university to be placed on academic probation (Graham & Dallam, 1986), and they have higher dismissal or failure rates (Baldwin, 1994; Graham & Hughes, 1994). In addition, Laanan (2000) using transfer data from the University of California, Los Angeles, contrasted transfers who were community college honor students with nonhonor students. The researcher used factor analysis on psychological, academic, and social dimensions and found significant differences between the two groups' in sociodemographic variables such as race, age, parents' educational level, GPAs, income, and degree aspirations. Honor students tended to be more connected and integrated into the academic and social settings at the two-year college and continued to have higher GPAs than nonhonor students after transferring.

However, there appear to be no studies on hybrid colleges that offer baccalaureate and associate's degrees at the same institution. Nor has there been research comparing transfer rates and baccalaureate attainment for hybrid colleges to rates for those who transfer out of two-year to four-year colleges.

Multiple Enrollment Patterns and Baccalaureate Attainment

Patterns of enrollment leading to the baccalaureate can be highly diverse. The terms swirling, double dipping, and coenrollment are used to describe the nontraditional or nonlinear path of serially transferring from one college to the next, or attending two institutions at the same time, on the pathway to the baccalaureate degree for both two-year and four-year students (Bontrager, Clemetsen, & Watts, 2005; Borden, 2004; de los Santos & Wright, 1990; Townsend,

2001). Whereas some students save time and money through coenrollment or dual enrollment, swirling has disadvantages (Adelman, 2006; Townsend, 2002).

Adelman (2006), updating his earlier study of 1999, used longitudinal data from NELS that followed a national sample of over 12,000 students from the eighth grade in 1988 and demonstrated that students who swirl are 17% less likely to obtain a baccalaureate degree than students who formally transfer. For this study swirling was described as "alternating sectoral enrollment" and was defined as starting at either a two-year or four-year college and moving back and forth, accruing more than 10 credits from each sector (Adelman, 2006). A key finding of this study was that degree completion was positively associated with those who formally transfer versus those who swirl (Adelman, 2006).

Drawing information from prior studies (National Longitudinal Study of High School 72, National Longitudinal Study of High School 82, High School and Beyond, Baccalaureate and Beyond), and the more recent Beginning Postsecondary Students, McCormick (2003) clarified that swirling was distinct from traditional transferring from one college to another. The researcher identified swirling with eight multi-institutional patterns of attendance: trial enrollment (experimenting with courses to determine the possibility of transfer); special program enrollment (e.g., study abroad and supplemental enrollment); accelerating or making up courses; rebounding enrollment (discontinuous attendance at two or more colleges); concurrent enrollment (course taking at two colleges at the same time); consolidated enrollment (where the actual program is an accumulation of courses from multiple institutions); serial transfer (where a student transfers in a relatively organized linear path that can include reverse transfer from four-year to two-year colleges); and independent enrollment (typically related to licensure or noncredit courses) (McCormick, 2003). McCormick (2003) called for further attention to these

divergent enrollment patterns as they impact college finances, student advisement strategies, general assumptions about the effect that colleges have on students, persistence and attainment. Diverse enrollment patterns such as swirling, double dipping, or coenrollment are relevant to this current exploratory study of where students begin as the transfer option(s) taken make it difficult to classify student transfer status (Borden, 2004), may add to time-to-degree, increase college costs, reduce course quality (Townsend, 2001), and reduce the likelihood of baccalaureate degree attainment (Adelman, 2006).

Two-Year and Hybrid College Overview

Beyond providing historical perspectives on the growth and conversion of universities within higher education (Lucas, 1994), the literature is scant regarding two-year colleges transforming to the four-year level by adding baccalaureates and the impact of that conversion on the student transfer experience, academic progress, and bachelor's degree attainment. Prager's (1993) research on intrainstitutional transfer policies revealed that 400 campuses offered both associate's and baccalaureate degrees; but no relevant research was found on how differences between two-year and hybrid colleges affected degree outcomes. Several articles discuss the need for two-year or community college structural reform or alteration, most notably Dougherty (1991). Dougherty (1991) stated that the two-year community college negatively effects the educational outcomes of its baccalaureate aspirants and therefore is in crisis, necessitating revamping. He called for radical transformation of this sector to be converted into baccalaureate granting colleges or directly joined with baccalaureate colleges as branch campuses.[4] After

[4] Dougherty (1991) presented a number of examples of state university two-year branch-campus connections (Where a two-year campus is a branch or satellite of a four-year campus) in Alaska, Connecticut, Hawaii, Kentucky,

reviewing the University Center model[5] of offering baccalaureate degrees on community college campuses, Lorenzo (2005) and Townsend (2005) called for further research to determine if transfer rates can be improved. Petry (2006) described key factors that affected the decision made by five Florida community colleges to become baccalaureate granting colleges.

The following section provides a historical perspective on two-year colleges; it discusses the transformation of two-year colleges into hybrid baccalaureate granting colleges; and it offers an institutional example of such transformation in an effort to present a foundation on how and why two-year colleges grew into granting baccalaureate degrees.

Two-year college overview. The two-year college as it exists today began around the late 1890s. Monroe (1972) generally attributes the community college movement to William Rainey Harper at the University of Chicago, who split the first two collegiate years from the last two. Harper pressed for the elimination of the four-year tradition, describing it as outdated (Lucas, 1994). He attempted to separate the University of Chicago into a lower junior college and an upper senior college (Glenn & Glenn, 2003).

In the 1920s there were debates concerning open admission policies, mission creep, stratification, vocationalism, elitism, and college missions being squeezed from the high schools below and the universities above (Lucas, 1994; Smith, Barrett, Gerlach, Goodrich, & Rose, 2003). In 1920 the American Association of Junior Colleges was founded to further define the

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Louisiana, New Mexico, Ohio, Pennsylvania, and South Carolina as a possible way to improve baccalaureate success for those who begin at two-year colleges.

[5] University Center, a term coined in the 1980s, is used to describe a formal collaborative arrangement between a community college and one or more four-year colleges to have the four-year college(s) offer and grant the baccalaureate on that particular community college campus (Lorenzo, 2005).

role of the first two years of college (Boggs, 2008). By 1938 these junior colleges served almost 20% of the college-going population and played a significant role in filling educational needs during the huge post–World War II surge resulting from the Servicemen's Readjustment Act (Lucas, 1994).

Whereas some have attempted to differentiate the community college from the junior or two-year college to frame or narrow its focus (Cohen & Brawer, 1982), Eells (1931) described four kinds of junior colleges: a two-year branch campus or university center that is controlled by a four-year university, a state junior college controlled by state boards, a district junior college controlled by a local district or county, and a local college with little or no governmental controlling authority.

Following World War II, the Truman Commission Report recommended the name community college, presenting it as the sector that would meet the needs of the local community through grade 14 (President's Commission on Higher Education, 1947). This report further called for a major expansion of instructive services and proposed an educational system that would not limit educational pursuits for those lacking personal resources. The two-year college has been described as being responsive to community and employer needs in nimble and receptive ways (Cohen, 2002; Phelan, 2000; Smith et al., 2003; Walker & Floyd, 2005) and often as the only higher education option for working adults that are place bound due to current full-time employment and family obligations (Walker & Floyd, 2005).

Transformation of two-year colleges. Higher education history is full of mission evolution and expansion of programmatic offerings (Brint & Karabel, 1989; Cohen, 2002; Dougherty, 2001; Duryea, 1973; Haworth & Conrad, 1995; Lucas, 1994; Rudolph, 1990). Transformation of colleges of adding additional and more advanced degrees (certificate or

diploma, associate's, bachelor's, graduate) has occurred from the very beginning of the education movement within the United States. From small schools that provided lessons in culture and social skill development grew two-year teacher college normal schools that spawned four-year normal colleges. Many of these normal colleges ultimately grew into state colleges and comprehensive colleges, and this expansion enabled universities to be created as they grew to offer the doctorate (Lane, 2003; Walker, 2005). Some have even posited that the hierarchy of higher education is arranged to match existing social classes by providing opportunity for some while limiting others (Berger, 2002; Bourdieu, 1973; Braxton, 2002; McDonough, 1997). What some have called two-year community college higher education growth others have called mission creep or expansion beyond the original goal of offering certificates and associate's degrees, and meeting local community needs. This type of higher education transformation predates the United States antebellum period (Mills, 2003; Walker, 2005).

Higher economic returns for four-year graduates (Baum et al., 2010; Provasnik & Planty, 2008), increased demand from local employers for the baccalaureate degree (Walker, 2002), and the desire among two-year colleges for higher stature motivated two-year colleges to offer four-year degrees (Cook, 2000). The two-year curriculum-typically the first two years of a baccalaureate program-has been structurally aligned to meet the curriculum requirements of four-year institutions has aided in this conversion of two-year colleges (Skolnik, 2001). Skolnik argued that, unlike the Canadian and European structure where "horizontal differentiation" occurred between sectors, the American system of two-year colleges being "hierarchically aligned with that of the four-year institutions" (2001, p. 5) enabled these two-year colleges to

offer baccalaureate degrees. This type of college has been called a "hybrid college"[6] (Floyd & Skolnik, 2005; Lorenzo, 2005).

There are other reasons for two-year colleges to offer baccalaureate degrees including changing demographics of college going students mean higher percentages of underrepresented students deciding to start at their local two-year college where they would be less likely to obtain baccalaureate degrees (Cook, 2000; Dougherty & Kienzl, 2006). In addition, the state's financial distress from declining budgets positioned community college expansion as a means of saving state money due to lower costs. Such expansion has helped industries meet local demands by offering programs of study that are in-demand (Dougherty, 2002; Dougherty & Kienzl, 2006; Ignash & Townsend, 2001; Provasnik & Planty, 2008; Walker, 2005; Wellman, 2002).

In 1996 the Colleges of Technology sector within the State University of New York, comprised of Alfred State, SUNY Canton, SUNY Cobleskill, SUNY Delhi, and Morrisville State, began working together to gain authority to offer baccalaureate degrees, to collaborate on marketing, and to hold discussions on shared leadership (Smith et al., 2003). The desire to save money and to respond to the need for technical focused baccalaureates gradually drove these five former agricultural and technical two-year colleges to offer bachelor's degrees (Smith et al., 2003). Today, the five call themselves baccalaureate granting colleges, even though they retain their subbaccalaureate mission of providing associate's degrees and certificates (State University of New York, 2009).

Some of these two-year colleges have gained approval to offer a limited set of courses to fulfill specific industry demands, to offer the baccalaureate degree, and some to quietly

[6] Some have referred to this as the community college baccalaureate (CCB) (Floyd, 2005; Floyd & Skolnik, 2005; Lane, 2003; Walker, 2005).

transform into some semblance of a four-year college (Cohen, 2002; Petry, 2006). Little analysis of this hybrid type of college has occurred, especially analyses relating to the effectiveness of the transformation, transfer differences, baccalaureate attainment, and graduation outcomes, and comparisons to two-year colleges (Floyd, 2005). In some cases identifying two-year colleges that are now offering baccalaureate degrees can be problematic because a few accrediting associations have reclassified some of these colleges based on the highest degree awarded (Floyd, 2005). The Southern Regional Education Board (SREB) and the North Central's Association (NCA) Higher Education Commission have established criteria to reclassify two-year colleges as baccalaureate or hybrid degree granting institutions when they reach certain milestones, in some cases when they offer only one baccalaureate, and in others when there is a preponderance of bachelor's degrees (Floyd, 2005).

The scarcity of research relating to hybrid colleges or the community college baccalaureate (CCB) may be seen as a weakness of the initiative (Floyd, 2005; Floyd & Skolnik, 2005; Lane, 2003). Some have argued that the community college baccalaureate is a ground-breaking solution to improving access to the bachelor's degree (Phelan, 2000). In a qualitative study Levin (2004) contrasted the Canadian four-year community college baccalaureate movement within Alberta and British Columbia from the 1990's and offered it as a model for the American community college baccalaureate in 2001-2003. The author concluded that these organizations will struggle financially to maintain their dual purposes. This is due to the baccalaureate mission requiring increasing library resources, accreditation, and research needs, maintaining the traditional mission of a community college along with the customary

requirements of higher faculty objectives and qualifications. More than a quarter of Canadian community colleges[7] offered baccalaureate degrees (Floyd & Skolnik, 2005).

One rationale for the introduction of two-year colleges offering baccalaureate degrees was increasing bachelor's degree access. In 2001 Florida ranked 46 out of 50 in the United States in providing access to the bachelor's degree (Furlong, 2005). The local legislature, the planning commission, and consultants recommended individual-campus baccalaureate-granting authority for community colleges with a strong university center, where they host at their campus a high number of external baccalaureate and master's degrees, (Cohen, 2003; Furlong, 2005). Furlong (2005) argued that the addition of in-demand baccalaureates at the community college level was to enhance the way the college serves the local needs of its community and is not a movement away from the historic mission of granting certificates and two-year degrees.

The Higher Learning Commission of the North Central Association of Colleges and Schools in 2000 established a task force to review the variety of ways that baccalaureate education was currently being delivered at community colleges (The Higher Learning Commission, 2001). The task force was charged to recommend the most suitable means to potentially extend authority for community colleges to offer bachelor's degrees. Utilizing a metric similar to the one established to allow baccalaureate-granting colleges to offer a *limited* scope of graduate programs, the task force recommended that the community colleges assume limited and specific authority based on proof of unmet needs, and offer a bachelor's degrees in a narrow scope of areas. The task force also suggested a pathway for the advancement of

[7] In Canada, the term *community college* is applied to all nonuniversity postsecondary institutions (NUPS), even though a number of NUPS would not fit that commonly used term. Ontario, Canada, however, decided to refer to the NUPS sector as colleges of applied arts and technology and not as community colleges (Skolnik, 2001).

community colleges to become baccalaureate institutions that involved assurances that they could meet certain quality standards (The Higher Learning Commission, 2001).

Some educators saw the effort to offer baccalaureate degrees at two-year or community colleges as "treasonous" (Evelyn, 2003). These educators believed that the movement could potentially grow two-year colleges away from their access and equity roots, thereby reducing the numbers of underrepresented students—those from lower economic strata, and first-generation students (Glennon, 2005; Phelan, 2000; The Higher Learning Commission, 2001). Other education leaders go further and suggested that these efforts are driven by individual aspirations and legislative posturing that will waste precious dollars and pit adjacent colleges against each other (Mills, 2003). Some thought the trend threatens the specific mission of this sector that is focused on transfer, remedial education, open-door admissions, workforce development and granting of associate degrees (Floyd & Skolnik, 2005; Lane, 2003; Mills, 2003; Phelan, 2000; Townsend, 2005; Wattenbarger, 2000). These campuses have generated tensions between faculty by separating them into a four-year versus two-year groups (Furlong, 2005; Townsend, 2005). Others agreed, and argued that the baccalaureate degrees being offered by two-year or community colleges are less rigorous and not as respected as a traditional bachelor's degree, and would be less acceptable as preparation for advanced degrees (Manzo, 2001; McKee, 2001; Wattenbarger, 2000). Opposition to the community college baccalaureate can be tremendously strong from two-year-only traditionalists (Martin & Samels, 2001). However, the history of higher education in the United States is replete with college expansions, transitions, change, and growth.

Other educators saw the trend of adding baccalaureate degrees at two-year or community colleges as a positive and natural part of the evolution of their college (Garmon, 2003;

McKinney, 2003; Petry, 2006; Walker, 2000, 2001). Townsend (2005) discussed 13 two-year colleges that offered associate and baccalaureate degrees and changed their names and became hybrid colleges where they offer "interdependent tiers" (p. 184) of degree offerings. One study at Tyler Junior college, one of the largest community colleges in Texas, sought views from underrepresented students concerning the desirability of a community college baccalaureate degree (Glenn & Glenn, 2003). Glenn and Glenn (2003) randomly surveyed 548 sophomore students who would have likely been in the process of selecting colleges to transfer to and found that over 80% of African American and Hispanic students, and 82% of White students would stay at or consider staying at their campus if an acceptable bachelor's degree were available. Students were asked to choose the most important reasons for staying at the college, and location and cost were most often cited (Glenn & Glenn, 2003).

An institutional example. One example of a hybrid college was the State University of New York at Canton (SUNY Canton) a public college located in the northeastern United States. This campus added baccalaureate degrees, though its previous mission had been to offer certificates, two-year vocational, and a transfer function. It offers students the option to transfer internally and externally, moving from subbaccalaureate programs to baccalaureate degree programs, or the option to transfer out to another college.

This campus is located in a rural area. It was founded 106 years ago as a state-supported agriculture and domestic science department within a 50-year-old private college (Howland, 1976). The college's founding was an outgrowth of the Morrill Act, during a time period when the United States was striving to industrialize agriculture (Geiger, 1998).

Four distinct periods or incidents brought this college to a state of instability and decline, forcing it to address issues of mission significance, purpose, retention, degree offerings, and

viability. They were (a) the Great Depression and threat of closure during the late 1930s, which led to the addition of two-year technical electricity and chemistry programs; (b) the formation of a unified state university system in the late 1940s, which established and strengthened its independence from the private college that founded it; (c) an increasingly difficult relationship with and physical separation from that private university during the 1960s that led to a new campus (Howland, 1976; Smith et al., 2003); and (d) a threat of closure in the mid-1990s, which led to the addition of technically-based baccalaureate degrees, which have dramatically increased enrollment (Smith et al., 2003; SUNY Canton, 2009).

A 64% decline in high school graduates from 1977 to 1995 (State University of New York, 1998) caused increased competition from among four-year colleges, and the four-year colleges lowered their admission standards to maintain their enrollment (Smith et al., 2003). The local community colleges surrounding SUNY Canton were offering similar programs but at a more affordable price at a time when price was an important factor in students' decisions about where to enroll (Smith et al., 2003). The college's mission and financial health were being squeezed from below and above (Lucas, 1994; Smith et al., 2003). SUNY Canton almost closed in the mid-1990s as enrollments had plummeted to the lowest level since the 1960s. Its decision to incorporate a baccalaureate degree granting mission sprang from a desire to fill an unmet local demand for technical four-year graduates, to remain open as an educational institution, and also to turn around the decline in enrollment (Mitchell, February 1, 2005; Smith et al., 2003).

During the mid-1990s, 50 to 65% of the students who enrolled came from the county where the college is situated. Within this market the population of high school graduates was anticipated to decline dramatically over the next 10 years because the area's college-age population was expected to shrink by one-third (Smith et al., 2003). The college enrolled an

equal number of men and women and had an underrepresented population of 16%. In 2008 85% of the students had financial need, as determined by the financial aid office. The family income breakdown of students was as follows: less than $20,000: 26%; $20,000–$40,000: 23%; $40,000– $60,000: 17%; $60,000–$80,000: 14%; greater than $80,000: 20%. Thirty-three percent of the students were from the first-generation in their family to attend college, and 33% were nontraditional (over 21 years old) students returning to college to retrain for a new career after being in the workforce. The campus saw its state support decline from almost 80% of what it cost to educate each student in the late 1970s to just below 30% (J. Kent, personal communication, September 24, 2008).

The campus subsequently gained new facilities and a unique ladder curriculum,[8] and it had experienced tremendous growth in its student population (SUNY Canton, 2009). The college was perceived by many as a leader within the two-year and four-year hybrid-college niche it served in the State University of New York system because of its successful growth and expansion (Mitchell, February 1, 2005; Smith et al., 2003). Originally founded as a two-year college, it has grown to offer three joint master's degrees, 16 baccalaureate programs that complement its 10 traditional technical certificate programs, and 22 associate's degree programs (SUNY Canton, 2008a). New baccalaureate offerings and 100 million dollars in new facilities and upgrades were planned for the following five years (J. Kent, September 24, 2008, personal communication).

The campus was last defined by the Carnegie classifications in 2003 as Associate's—Public Four-Year, Primarily Associate's, because less than 10% of its students were in

[8] Ladder curriculum is a colloquial term meaning that students are able to start at a certificate program, climb to an associate degree, then on to a baccalaureate (J. Kent, September 24, 2008).

baccalaureate programs. In 2008 it would have been placed within the Baccalaureate/Associate's Colleges category due to baccalaureate enrollment exceeding 10% of the total student population (Carnegie Foundation for the Advancement of Teaching, 2007). Students could begin with a certificate or associate's program and remain to complete a baccalaureate (SUNY Canton, 2008b). In 2008 the college offered 10 certificate programs that were mainly vocational. It also offered a mix of associate's degrees: vocational and technical as well as liberal arts and general education. Baccalaureate programs were a mixture of traditional degree offerings such as management, leading to the bachelor of business administration; veterinary technology, leading to the bachelor of science; sports management, leading to the bachelor of business administration; and technically-based degree offerings such as alternative and renewable energy systems, leading to the bachelor of technology; dental hygiene, leading to the bachelor of technology; and graphic and multimedia design, leading to the bachelor of technology (SUNY Canton, 2008a).

Although this campus has added baccalaureate degrees to the original mission of offering certificates and associate's degrees, no analysis exists on baccalaureate attainment for the students who started there or other hybrid colleges. Understanding transfer patterns and baccalaureate attainment for colleges like this one, and comparing them with two-year or community colleges in general, may indicate the need for additional research in relation to hybrid colleges.

Moral Imperative to Understand Multiple Pathways

Since there is a disproportionally high number of underrepresented students, including low-income students, students of color, first-generation students, and nontraditional adults, that start at two-year colleges, there is a moral imperative to further understand differing paths of

transfer and baccalaureate attainment (Horn & Nevill, 2006; Horn et al., 2002; Provasnik & Planty, 2008). Because of their personal and family educational backgrounds, underrepresented students often do not have equal access to or awareness of postsecondary education, particularly at the baccalaureate level (Cabrera & La Nasa, 2000a; McDonough, 1997).

Social stratification. Patterns of collegiate attainment tend to correspond to social strata as society appears to replicate patterns of collegiate nonattainment for many subsections of our population. The relationship between higher education expectations, transfer outcomes, and baccalaureate attainment on one hand, and socioeconomic status on the other has been well documented (McCormick, 1997). Educational attainment opportunities do not appear to be equal for all when one considers the outcomes for those with low incomes. These students have a lack of access and high dropout rates. They face a college-going gap of 30% between the lowest income and the highest income students. Equally important is the relationship between parents' educational level and their students' bachelor's degree attainment as there are lower levels of baccalaureate attainment for underrepresented students (Bradburn, Berger, Li, Peter, & Rooney, 2003; Burd, 2002; Horn & Nunez, 2000).

Many more low-socioeconomic-level students begin their higher education at two-year colleges because they are more affordable than the four-year colleges (Bailey, Calcagno et al., 2005; Dougherty & Kienzl, 2006). There are fewer tutoring services and less developmental education at four-year colleges, and less student financial aid (Bowen et al., 2005; Dougherty, 2002; Dougherty & Kienzl, 2006; Dowd & Melguizo, 2008; Flowers, 2006; McPherson & Schapiro, 1999; Mills, 2003; Provasnik & Planty, 2008; Wellman, 2002). Using nationally generalizable longitudinal data taken from NELS (1988) of students and information from their parents who where at least two years beyond high school, Plank and Jordan (2001) used logistic

regression to understand higher education selection between two-year and four-year colleges. They controlled for a number of potentially confounding variable[9] groupings; student and family background characteristics, social capital proxies, SAT/ACT preparation and test taking, and college selection actions taken on the choice of college level (two-year, four-year, versus never enrolled). They found that students with higher academic achievement and higher socioeconomic status (SES) were more likely than students with lower academic achievement and lower socioeconomic status to begin at a four-year versus a two-year college. These outcome differences were due to increased understanding of higher education**,** improved counsel and guidance, and timeliness in enrollment steps taken (Plank & Jordan, 2001). This study demonstrates the influence of cultural capital (Arnold, 2003; Bourdieu, 1973; St. John et al., 2005) on college selection for those that come from privileged backgrounds and is due to the impact of socio-economic status on degree completion, and the need to control for background characteristics, and SES.

Provasnik and Planty (2008), utilizing multiple NCES datasets including the Educational Longitudinal Study of 2002, the National Education Longitudinal Study of 1988, the Beginning Postsecondary Students Longitudinal Study of 2003/06, the National Postsecondary Student Aid Study, and the National Study of Postsecondary Faculty, concluded that two-year colleges had higher percentages of those from the low-income strata (26% versus 20% respectively at the

[9] Student and family background characteristics (race, gender, number of siblings, locale, prior test scores, SES), social capital proxies (levels of communication on: course taking, course activities, grades, SAT/ACT, and applying to colleges), SAT/ACT preparation and test taking (parent encouragement to take SAT/ACT, taking SAT/ACT prep course, exam planning), and college selection actions taken (guidance and help from school, college visits with parents, financial aid information/application, and applications to colleges).

poverty threshold), and higher dropout rates as compared to four-year colleges (45% versus 17% respectively without completing a degree or certificate). Sandy et al. (2006), utilizing three longitudinal databases spanning over 20 years (National Longitudinal Survey of 1972, Beginning Postsecondary Study of 1994, and High School and Beyond of 1992 and a random sample of 2,500 students who entered community college within two years of graduation from high school) found that two-year students tended to be at an initial disadvantage versus those who begin at four-year colleges because they do not have the academic ability, have had lower high school grades and lower SAT scores, were more likely to be manual laborers, to have children, to work full-time, and to have time gaps in their enrollment (Berkner et al., 1996; Lee & Frank, 1990; Sandy et al., 2006).

Analysis of data from the Beginning Postsecondary Students survey and the National Postsecondary Student Aid Survey indicated that rising college tuition, particularly for the public sector, has played a significant role in the socioeconomic stratification that segments two-year and four-year higher education (Carter, 1999; St. John et al., 2005). This is not surprising as the national average cost of two-year and community college attendance is approximately 40% of what it costs to attend a public four-year college (Cabrera & La Nasa, 2000c; Cohen, 2003; St. John et al., 2005). Results of increasing costs are especially relevant for low-income students and for those attending two-year colleges where enrollment rates tend to be lower when tuition is higher (Kane, 1995; McPherson & Schapiro, 1999).

Roksa (2010), utilizing data on 5217 students from the National Educational Longitudinal Study from 1988, analyzed the distribution of two-year and four-year enrollments within states and found that in states with a higher proportion of two-year attendance as compared to states with lower two-year attendance, there was a higher probability of bachelor's attainment for those

who attended four-year colleges, after controlling for differences in State contexts (relative community college sector size, tuition ratio, need based aid, state appropriations, articulation policies, unemployment, college educated population, and locale) and student characteristics (gender, race, test scores, socioeconomic background, and baccalaureate expectations). The author argued that this is because the higher number of two-year colleges provided more opportunities for students to self sort between two-year and four-year colleges prior to attending and may be a contributing factor in the social stratification of higher education (Roksa, 2010).

Further improvements are needed in the educational pipeline to improve both access to college and baccalaureate attainment for families with lower incomes. Given the improved economic, personal, and societal return of obtaining a baccalaureate degree rather than a two-year degree, finding ways to improve baccalaureate attainment for those who are economically disadvantaged should be a priority for educators and policy makers.

Underrepresented-student attendance and completion patterns. Underrepresented students such as Blacks, Hispanics, Native Americans/Alaskans as compared to White, single parents versus those who are not single parents, first-generation students contrasted to students whose parents attended college, and older students versus those who are traditional aged tend to begin their college education at the two-year versus the four-year level (Dougherty & Kienzl, 2006; Leigh & Gill, 2004; Provasnik & Planty, 2008; Roderick et al., 2008). By beginning at the two-year level, these students are at a significant disadvantage because they are less likely to complete a four-year degree than those who begin at four-year colleges (Ishitani, 2008; Porter, 1999; U.S. Department of Education, 2003). In addition, data from multiple and diverse longitudinal databases (NELS, BPS, Baccalaureate and Beyond, City University of New York system study) indicated that completion rates at two-year colleges were significantly lower than

those at four-year colleges (Alfonso, 2006; Bailey, Calcagno et al., 2005; Bradburn et al., 2003; Dougherty, 2001; Lavin & Crook, 1990; Pascarella, 1999). Equally troubling results are found within the science occupations where the labor force is highly skewed against Black and Hispanic students because of their higher attrition in the science fields (Barlow & Villarejo, 2004).

There is a racial and ethnic imbalance in who attends different segments of the United States higher education system. White students enrolled at two-year colleges at lower percentages than Black and Hispanic students (Clements, 2002; Horn & Nevill, 2006; Horn et al., 2002; Laanan, 2000). A breakdown of U.S. Census Bureau and U.S. Department of Education National Center for Education Statistics (NCES) data for the Fall 2000 semester illustrated that total two-year enrollment figures by race/ethnicity were as follows: 36% of White students who attended college enrolled at the two-year level as compared to 42% of Black students and 58% of Hispanic students (Harvey, 2003). Two years later in Fall 2002 utilizing data taken from the NCES Beginning Postsecondary Students Longitudinal Study, the disparity in the numbers continued, with 41% of White students enrolling at the two-year level as compared to 44% of Black students and 51% of Hispanic students (Bailey, Jenkins, & Leinbach, 2005).

More African American students attended two-year colleges than four-year colleges (Flowers, 2006). The dropout ratio for Black, Hispanic, and Native American/Alaskan students at every level of the educational pipeline is significantly higher than that of Whites (Astin, 1982; Barlow & Villarejo, 2004; Olatunji, 2005). Because of this, numerous authors have argued that the path to the baccalaureate does not necessarily run through the two-year college (Alfonso, 2006; Arbona & Nora, 2007; Hoachlander et al., 2003; Wassmer et al., 2004).

Using longitudinal data from the NELS dataset, Attewell, Lavin, Domina, and Levey (2006) found that Black students are more likely to take developmental or college preparation courses than equally prepared White students (Attewell et al., 2006). Participation in these courses ironically can lead to longer degree completion times, discouragement, and increased dropout rates (Adelman, 2006; Baum et al., 2010; Chen, 2005; Clewell & Tinto, 1999; Hoachlander et al., 2003; Sandy et al., 2006). Attewell, Lavin, Domina, and Levey (2006) also showed that given similarly prepared students with comparable backgrounds that two-year colleges are more likely to require students to take remedial courses than four-year colleges.

NCES data exemplified that first-generation students are less likely to obtain both associate's and baccalaureate degrees than students who have at least one parent who attended college (Chen, 2005; Choy, 2001; Horn & Nunez, 2000; Lohfink & Paulsen, 2005; Nunez & Cuccaro-Alamin, 1998; U.S. Department of Education, 2001a). Over 50% of those attending community colleges are first-generation college students (Clements, 2002). First-generation students take part less in college search programs and selection activities, and their application efforts are less timely than those who are not first-generation students. First-generation students tend to be from lower socioeconomic strata; they tend to delay college enrollment, stop out more, and work full time at higher rates than their counterparts with a parent who attended college (Cabrera et al., 2001; Chen, 2005; Horn & Nunez, 2000; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1995).

Chen (2005), utilizing National Center for Educational Statistics data from the Postsecondary Education Transcript Study, collected, as part of NELS (1988), and analyzed transcript files and concluded that first-generation students obtained fewer credits, took a smaller quantity of academic courses, received lower grades, required more remediation, and were more

likely to drop or retake courses that they started than their counterparts who were not first-generation students. These factors contributed to a lower likelihood of baccalaureate completion, even after controlling for student background characteristics, high school academic preparation, and academic performance.

Single parents versus students who are not single parents also tend to have attributes that place them at a disadvantage in degree completion; they tend to have lower incomes, to be older, to have more dependents, to begin at the two-year level; and they are less likely to obtain both associate's and baccalaureate degrees (Bowen et al., 2005; Dougherty & Kienzl, 2006; Gill & Leigh, 2000; Surette, 2001; Taniguchi & Kaufman, 2007; Terenzini et al., 1995). Utilizing data from the 1979 through the 1990 waves of the National Longitudinal Survey of Youth (NLSY), which included 20,432 female and 18,832 male high school graduates, Surette (2001) found that even when controlling for marital status, gender differences in job-related preferences, and having children, women are less likely to transfer than men from a two-year to a four-year college. These gender patterns are of particular concern in relation to individuals of lower socioeconomic status and those who are place bound (Dougherty, 1991; Rankin et al., 2010; Rouse, 1995), making baccalaureate attainment even more difficult. These enrollment patterns, attainment rates, and developmental course-taking examples appear to reflect a broken educational system that seems to be stacked up against underrepresented students.

Summary, Synthesis, and Independent Variables

The potentially promising phenomenon of offering baccalaureate degrees at two-year colleges, thus creating hybrid institutions needs further investigation because the literature has shown increased difficulties in transfer and lower baccalaureate attainment for those who begin

at two-year institutions and need to transfer to four-year colleges to obtain the baccalaureate degree.

As discussed earlier, there is significant social stratification within our higher education system. Underrepresented and lower socioeconomic-level students tend to begin at higher percentages at two-year colleges because these students often cannot afford the higher costs for four-year education while struggling with depressed family wages, depleted financial aid, and lacking in social and cultural capital (Arnold, 2003; Bourdieu, 1973; Bowen et al., 2005; Dougherty, 2002; Dougherty & Kienzl, 2006; Dowd & Melguizo, 2008; McPherson & Schapiro, 1999; Plank & Jordan, 2001; Stephan et al., 2009). Therefore, while two-year colleges have had higher enrollment growth than their four-year counterparts, baccalaureate attainment levels have not grown in a similar manner, particularly for those who transfer from two-year colleges (Sandy et al., 2006).

With baccalaureate degree graduates at hybrid colleges analyzed in this dissertation more than doubling from 1987 to 2007, and associate's degree growth at these same colleges remaining stable (U.S. Department of Education, 2010), research centered on this educational opportunity are long past due as this is an unstudied area. This investigative study examined one aspect of the relationship between college structure and student transfer and baccalaureate rates, namely, the relationship between student origins at hybrid colleges versus two-year colleges. This dissertation adds to the limited body of literature that reviews alternative postsecondary pathways and organizational structures that influence student progress and persistence by taking into account student differences by controlling for social background (race, gender, age, parents' higher education level, and parents' socioeconomic status), other precollege personal characteristics (first college attended, high school degree or equivalent, remedial math, remedial

reading, remedial study skills, remedial writing, education expectations of a bachelor's degree or higher, and above average academic ability as compared to others), external demands as students enter college (first college attended, married, children, single parent, and work categories), and experiences during college (students attendance status, whether major was academic or vocational, GPA – A's and B's, academic integration, and social integration).

Chapter 3

Given the lack of success in transfer and baccalaureate attainment for those who begin at two-year colleges and the increased benefits that a baccalaureate provides those who obtain it, this study sought to examine how beginning at a hybrid, as compared to a two-year college, affected transfer and baccalaureate attainment. This methods chapter reviews: (a) The research questions and hypotheses; (b) data, design, and procedures; (c) data analysis; and (d) limitations of the study.

Research Questions and Hypotheses

The first research question was: How does beginning at a hybrid college that offers subbaccalaureate and baccalaureate degrees differ from beginning at a two-year college in relation to transfer rates and baccalaureate attainment?

The first hypothesis of this study was that those who begin at hybrid colleges that offer subbaccalaureate and baccalaureate degrees will have lower transfer and higher baccalaureate completion rates than students who start at a two-year college and transfer out to a four-year college.

The second research question was: Controlling for social background variables (first college attended, race, gender, age, parents' higher education level, and parents' socioeconomic status - SES), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

The second hypothesis of this study was that, even when controlling for personal background characteristics or items that cannot be changed as students are born into them, students who begin at hybrid colleges that offer subbaccalaureate and baccalaureate degrees will

have lower transfer and higher baccalaureate completion rates than students who start at a two-year college and transfer out to a different four-year college.

The third research question was: Controlling for other precollege personal characteristics (first college attended, high school degree or equivalent, remedial math, remedial reading, remedial study skills, remedial writing, education expectations of a bachelor's degree or higher, and above average academic ability as compared to others), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

The third hypothesis of this study was that, even when controlling for other precollege personal characteristics, students who begin at hybrid colleges that offer subbaccalaureate and baccalaureate degrees will have lower transfer and higher baccalaureate completion rates than students who start at a two-year college and transfer out to a different four-year college.

The fourth research question was: Controlling for external demands as students enter college (first college attended, married, children, single parent, and work categories), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

The fourth hypothesis of this study was that, even when controlling for external demands as students enter college, students who begin at hybrid colleges that offer subbaccalaureate and baccalaureate degrees will have lower transfer and higher baccalaureate completion rates than students who start at a two-year college and transfer out to a different four-year college.

The fifth research question was: Controlling for experiences during college (first college attended, students attendance status, whether major was academic or vocational, GPA – A's and B's, academic integration, and social integration), how does transfer status and baccalaureate

attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

The fifth hypothesis of this study was that, even when controlling for experiences during college, students who begin at hybrid colleges that offer subbaccalaureate and baccalaureate degrees will have lower transfer and higher baccalaureate completion rates than students who start at a two-year college and transfer out to a different four-year college.

Data, Design, and Procedures

I used the Beginning Postsecondary Students longitudinal study (BPS) (NCES, 2008a) and the National Education Longitudinal Study of 1988 (NELS) (NCES, 2008b) to develop two perspectives on the research questions. BPS is a longitudinal study taken from the National Postsecondary Student Aid Study (NPSAS) that followed several cohorts of students who entered college for the first time. These students were initially surveyed through NPSAS, and then followed up two and five years after enrolling in college. The initial survey was derived from the 1990 NPSAS with additional surveys taken from the 1992 and 1994 BPS (NCES, 2008a).

NELS is a national longitudinal sample that tracked eighth graders starting in the spring of 1988. These students were again surveyed in 1990 when most of the students were high school sophomores, in 1992 when many were high school seniors, in 1994 when they were college sophomores, and in 2000-when those who graduated would have been two to four years out of college. Typically these students would have entered college in 1992–1993, and graduated in 1995–1997 (NCES, 2008b).

I selected these two datasets because they could provide a detailed and complete longitudinal view of the early days of hybrid colleges (Dougherty & Kienzl, 2006; Flowers,

2006; Pascarella & Terenzini, 1991). The BPS dataset was focused on first-time students regardless of age, and the NELS dataset follows a cohort from eighth grade through college. Although these data may be considered dated when compared to the more recent Education Longitudinal Study of 2002 (ELS:2002) (NCES, 2010), the ELS 2002 data will not be complete until 2014 and will be released even later. Utilizing the data selected enabled a broad analysis of the time period when hybrid colleges were getting started. Further, they offered a thorough picture of the student characteristics represented in the datasets, although some caution is warranted due to the reliability of self-reported data, memory recall, and independent variable constructs (see chapter 3 limitations). I decided to use both databases because of the uniqueness that each brought to this study. Like Dougherty and Kienzl (2006) I sought an understanding of student age differences (BPS) versus a singular cohort (NELS), specific degree progression (BPS), and differing sample sizes.

I was able to obtain BPS data that provided an understanding of transfer from first college attended in 1990 and then controlled for the student background characteristics. This dataset also provided a student's degree progression from first college attended through the 1994 survey, first and second degree attained, and degree progression overall, and then controlled for the student background characteristics for overall degree progression.

From the NELS database I was able to obtain overall baccalaureate degree obtained, and then controlled for the student background characteristics for this dependent variable. The NELS transfer data and degree and college progression was contained in transcript files that were not readily accessible to me. For this study NELS data only provides baccalaureate attainment overall.

There have been important transformations within postsecondary education over the past 25 years in overall enrollment, attendance status, gender makeup, control of institution, and race/ethnicity. In 1990 there were 13,819,637 students enrolled in degree-granting postsecondary institutions with 56.6% attending full-time, 78.4% attending public colleges, and 54.5% female; as compared to 20,642,819 students in 2012 with 61.7% attending full-time, 72.1% attending public colleges, and 56.8% female (U.S. Department of Education, 2014a). From 1990 to 2000 overall enrollment increased by 10.8%, however between 2001 and 2012 enrollment increased by 29.6% with much of that increase coming from full-time enrollment (U.S. Department of Education, 2014a). In 1990 fall enrollment at degree-granting postsecondary two-year colleges consisted of 76.4% White, 10.1% Black, 8.2% Hispanic, and 4.2% Asian/Pacific Islander students. In 2012 this enrollment had changed to 54.3% White, 15.8% Black, 20.5% Hispanic, and 6.0% Asian/Pacific Islander students with dramatic changes in White and Hispanic percents (U.S. Department of Education, 2014b). The data analyzed from the BPS and NELS for this study was very similar to the national two-year data in 1990 (see Table 16 – p. 106, and Table 39 – p. 141).

Treatment group colleges. Prior to receiving access to BPS and NELS, I identified the hybrid, or treatment group, colleges (colleges that offer both associate's and baccalaureate degrees) using the Carnegie classifications database (Carnegie Foundation for the Advancement of Teaching, 2009). This file, based on data as of 2004, contained related information about all of the accredited, degree granting colleges and universities in the United States and its territories that are represented in the National Center for Education Statistics IPEDS system (Carnegie Foundation for the Advancement of Teaching, 2010). This file contained data relating to 2,703 colleges and universities from 2004 that enrolled 7,569,339 students and had total graduates with

the following degrees: 673,462 associate's, 1,421,299 baccalaureates, 564,915 master's, and 49,168 doctorates.

For this study, the 2,703 total colleges from the United States and its territories found in the Carnegie classification database from 2004 were filtered by colleges that had more than 100 associate's graduates (Carnegie variable AATOT), and those that were public or private not for profit (Carnegie variable Control). I eliminated private for-profit colleges from this analysis in an effort to control for threats to internal validity relating to college selection, because these colleges typically have limited course offerings that are focused on vocational, business, and technical fields versus the comprehensive nature of public and non-profit two-year colleges (Bailey, Badway, & Gumport, 2001). I decided to retain private not-for-profit colleges based on prior research. Stephan et al. (2009), utilized data from the National Educational Longitudinal Study of 1988, propensity scores and Kolmogorov-Smirnov two-sample tests, and confirmed that there was no significant difference in high school test scores of English and math, socioeconomic status distributions, and high school grades between two-year public and two-year private school students. The authors further assert that "students attending private and public two-year colleges appear to be highly similar in their preparation and background" (Stephan et al., 2009, p. 577). Private two-year colleges, however, have higher degree attainment rates than public two-year colleges, and the authors surmise that the differences are due to more effective organizational and administrative procedures (Rosenbaum, Redline, & Stephan, 2007; Stephan et al., 2009).

The filtering of colleges that had at least 100 associate's degree graduates in 2004 made it possible to look further back in time to 1995–1998 when students in the two datasets would have graduated from college. I filtered out colleges if they had less than 100 associate's degree graduates, the critical mass needed to satisfy statistical conclusion validity concerns (Keith,

2006). This filtering of the Carnegie classification database produced a list of 1,135 college institutional IDs.

Then I entered the 1,135 college institutional IDs into the IPEDS Data Center Data (U.S. Department of Education, 2010) to obtain 20 years of graduation, data from 1987 to 2007, for associate's, baccalaureate, master's, and doctoral degrees. The IPEDS system failed to find five of the colleges, reducing the list to 1,130 colleges. Also filtered out were those colleges that had baccalaureate graduates in 1991 when the NELS:88 students would have been in the 11th grade. I decided that the treatment group of colleges should have had at least a brief history (the two years spanning at least 11th and 12^{th} grade) of offering both associate's and baccalaureate degrees to be included, as those aspiring to earn baccalaureate degrees may have been influenced in selecting that particular college by the availability of both degrees. This filtering produced a list of 133 colleges. Four of these colleges were eliminated, as they had associate's graduates in 2004, and they did not have any associate's degree graduates during the study's time frame, leaving 129 colleges.

Finally, I filtered the listing of colleges by those in which associate's graduates made up a core of at least 20% of total degrees awarded. Twenty percent was arbitrarily selected because it eliminated colleges in which the associate's degree was insignificant, even an afterthought in their core mission. Many of the colleges that were eliminated by using the final filtering of 20 percent associate's graduates were large comprehensive universities (see Appendix B). This final filtering left 60 colleges that had both associate's and baccalaureate graduates in 1991 and where the associate's graduates made up at least 20% of the total graduates. This listing of hybrid colleges (see Appendix A) was used to select the treatment group of students from the BPS and NELS datasets.

The 60 hybrid colleges from the IPEDS database list were predominantly located in the eastern United States, and distributed in the following regions: New England: 6; mid-East: 15; Great Lakes: 16; Plains: 3; Southeast: 7; Southwest: 2; Rocky Mountains: 4; far West: 4; and outlying areas: 3 (see Table 2).

Table 2

Geographical Distribution of Treatment Group Colleges

Geographical region	Colleges	%
New England: CT ME MA NH RI VT	6	10%
Mid-East: DE DC MD NJ NY PA	15	25%
Great Lakes: IL IN MI OH WI	16	27%
Plains: IA KS MN MO NE ND SD	3	5%
Southeast: AL AR FL GA KY LA MS NC SC TN VA WV	7	12%
Southwest: AZ NM OK TX	2	3%
Rocky Mountains: CO ID MT UT WY	4	7%
Far West: AK CA HI NV OR WA	4	7%
Outlying areas*: AS FM GU MH MP PR PW VI	3	5%
Total	60	100%

* AS-American Samoa, FM-Federated States of Micronesia, GU-Guam, MH-Marshall Islands, MP-Northern Mariana Islands, PR-Puerto Rico, PW-Palau, VI-Virgin Islands

The college listing was fairly evenly distributed by the Carnegie classification term locale/degree of urbanization within the following categories: large city: 13; mid-size city: 20; urban fringe of large city: 6; urban fringe of mid-sized city: 4; large town: 3; small town: 9; rural: 2; and not assigned: 3 (see Table 3).

Table 3

Treatment Group College Locations by Degree of Urbanization

Locale-degree of urbanization	Colleges	%
Large city	13	22%
Mid-size city	20	33%
Urban fringe of large city	6	10%
Urban fringe of mid-size city	4	7%
Large town	3	5%
Small town	9	15%
Rural	2	3%
Not assigned	3	5%
Total	60	100%

Thirty-two of the colleges (53%) were public and 28 (47%) were private not for profit. Eleven of the colleges were Carnegie classified as "minority-serving institutions"; seven were categorized as "Hispanic-serving institutions"; two were classified as a "historically Black college or university"; one was labeled a "women-only college"; two were "land-grant colleges"; and three were considered "urban institutions" (Carnegie Foundation for the Advancement of Teaching, 2009).

At the hybrid colleges in this study from 1987 to 2007, associate's degree graduation attainment made incremental increases, from 21,222 to 25,651; however, during this same time period, baccalaureate degree attainment more than doubled, from 19,077 to 42,221 (U.S. Department of Education, 2010) This growth rate in baccalaureate degrees is promising (see Table 4).

Table 4

Summary of Hybrid Treatment Group College Degrees Granted by Year

Year	AA	BA	MA	PhD	AA + BA	BA%
1987	21,222	19,077	1,875	17	40,299	47%
1988	20,928	20,323	1,847	37	41,251	49%
1989	20,971	21,074	2,126	22	42,045	50%
1990	22,070	22,750	2,336	24	44,820	51%
1991	22,368	23,854	2,131	28	46,222	52%
1992	23,213	25,262	2,362	24	48,475	52%
1993	23,676	26,535	2,636	30	50,211	53%
1994	23,515	27,531	2,762	28	51,046	54%
1995	22,590	28,324	3,084	31	50,914	56%
1996	22,801	29,509	3,367	32	52,310	56%
1997	22,543	30,160	3,548	32	52,703	57%
1998	22,926	30,860	3,617	36	53,786	57%
2000	21,637	32,293	4,032	56	53,930	60%
2001	22,218	33,039	4,335	49	55,257	60%
2002	21,850	34,517	5,187	37	56,367	61%
2003	22,133	36,180	6,347	51	58,313	62%
2004	23,655	38,361	7,514	58	62,016	62%
2005	23,764	39,871	7,981	129	63,635	63%
2006	22,088	38,470	9,140	165	60,558	64%
2007	25,651	42,221	10,127	258	67,872	62%

Data downloaded from the IPEDS data center (U.S. Department of Education, 2010)

Control group colleges. Control group colleges, or two-year and community colleges, were also identified using the Carnegie classifications database (Carnegie Foundation for the Advancement of Teaching, 2009). To obtain the list of the two-year and community colleges that students would have attended, the same grouping of 2,703 total colleges used for the treatment group filtering found in the Carnegie classification database from 2004 were filtered by colleges that had more than 100 associate's degree graduates (variable AATOT) in 2004, and those that were public or private not for profit (Carnegie variable CONTROL). I again eliminated private for-profit colleges from this analysis in an effort to control for threats to internal validity relating

to college selection, because these colleges typically have limited course offerings that are focused on vocational, business, and technical fields versus the comprehensive nature of public and non-profit two-year colleges (Bailey et al., 2001). As previously stated, the filter was also limited to colleges that had at least 100 associate's degree graduates in 2004 to enable me to look further back in time to 1995–1998 when students in the two datasets would have graduated from college. Colleges were filtered out if they had less than a critical mass of 100 associate's degree graduates in 2004. This filtering of the Carnegie classification database produced a list of 1,135 college institutional IDs.

Again I entered the 1,135 college institutional IDs into the IPEDS Data Center Data (U.S. Department of Education, 2010) to obtain 20 years of graduation, data from 1987 to 2007, for associate's, baccalaureate, master's, and doctoral degrees. Five colleges were not found by the IPEDS system, reducing the list to 1,130 colleges. The listing of colleges was further filtered by those colleges that had more than 100 associate's graduates in 1991 when the NELS:88 students would have been in the 11th grade. I decided that the control group of colleges should have had at least a brief history of offering associate's degrees to be included. This filtering produced a list of 886 colleges.

The listing of two-year and community colleges was again filtered by eliminating those that had baccalaureate graduates in 1991 so as to distinguish the control group from the treatment group. This filtering produced 794 colleges. I filtered these colleges again by eliminating those who had baccalaureate graduates in 1996 when many of the control group students would have already transferred and graduated with a bachelor's degree. I eliminated six additional colleges because they were missing the coding for locale-degree of urbanization (Carnegie variable

LOCALE) or accreditation type (Carnegie variable ACCRED). This filtering produced a list of 775 colleges.

Finally, this listing of two-year and community colleges was further reduced when I randomly eliminated colleges in which there was imbalance or oversampling as compared to the hybrid college treatment listing as this would make interpretation of the results easier by having sample sizes that were more similar (Keith, 2006). To accomplish this, I used three variables: ranges of associate's degree graduate numbers in 1996, accreditation type (Carnegie variable ACCRED) and locale-degree of urbanization where the values were skewed (Carnegie variable LOCALE). The control group of colleges was oversampled in associate's graduate ranges of 200–249, 250–499, and 500–999 and undersampled in associate's graduate ranges of 0–99 and 100–149. This grouping of control group colleges was also oversampled in locale-degree of urbanization in the categories of "urban fringe of large city," "small town," and "rural," while at the same time they were undersampled in "large city" and "mid-sized city." Finally, the control group of colleges was oversampled in accreditation type in the southern and western regions and undersampled in middle states and New England regions. I eliminated 306 colleges using the three variables of associate of arts (AA) graduate numbers, locale-degree of urbanization, and accreditation type, which left 469 control group colleges.

The 469 control colleges from the IPEDS database list were predominantly located in the eastern United States, and distributed in the following regions; New England: 37; mid-East: 88; Great Lakes: 92; Plains: 45; Southeast 74; Southwest: 55; Rocky Mountains: 14; far West: 63; and outlying areas: 1. See Table 5 for a comparison of control and treatment group colleges by geographical region.

Table 5

Comparison of Control Group and Treatment Group Colleges by Region

Geographical region	Control	C %	Treatment	T %
New England: CT ME MA NH RI VT	37	7.9%	6	10.0%
Mid-East: DE DC MD NJ NY PA	88	18.8%	15	25.0%
Great Lakes: IL IN MI OH WI	92	19.6%	16	26.7%
Plains: IA KS MN MO NE ND SD	45	9.6%	3	5.0%
Southeast: AL AR FL GA KY LA MS NC SC TN VA WV	74	15.8%	7	11.7%
Southwest: AZ NM OK TX	55	11.7%	2	3.3%
Rocky Mountains: CO ID MT UT WY	14	3.0%	4	6.7%
Far West: AK CA HI NV OR WA	63	13.4%	4	6.7%
Outlying areas*: AS FM GU MH MP PR PW VI	1	0.2%	3	5.0%
Total	469	100%	60	100.0%

* AS-American Samoa, FM-Federated States of Micronesia, GU-Guam, MH-Marshall Islands, MP-Northern Mariana Islands, PR-Puerto Rico, PW-Palau, VI-Virgin Islands

A comparison of the control group and the treatment group of overall college associate's degree graduates in 1996 is represented in Table 6.

Table 6

Comparison of Control Group and Treatment Group College Enrollments in 1996

AA graduate size: 1996	Control	C %	Treatment	T %
0–99	11	2.3%	9	15.0%
100–149	52	11.1%	9	15.0%
150–199	89	19.0%	11	18.3%
200–249	44	9.4%	5	8.3%
250–499	104	22.2%	13	21.7%
500–999	122	26.0%	8	13.3%
1,000–1,499	31	6.6%	3	5.0%
1,500 and above	16	3.4%	2	3.3%
Total	469	100.0%	60	100.0%

The control group college listing similarly distributed based on the percentage of total by locale-degree of urbanization within the following categories; large city: 93; mid-size city: 145; urban fringe of large city: 59; urban fringe of mid-size city: 30; large town: 25; small town: 88;

rural: 27; and not assigned: 2. See Table 7 for a comparison of control and treatment group colleges by locale-degree of urbanization.

Table 7

Comparison of Control and Treatment Group Colleges by Locale-Degree of Urbanization

Locale-degree of urbanization	Control	C %	Treatment	T %
Large city	93	19.8%	13	21.7%
Mid-size city	145	30.9%	20	33.3%
Urban fringe of large city	59	12.6%	6	10.0%
Urban fringe of mid-size city	30	6.4%	4	6.7%
Large town	25	5.3%	3	5.0%
Small town	88	18.8%	9	15.0%
Rural	27	5.8%	2	3.3%
Not assigned	2	0.4%	3	5.0%
Total	469	100.0%	60	100.0%

The control college listing was evenly distributed based on percentage by accreditation as another way to compare the control and treatment groups within the following categories: nationalized/specialized: 12; state: 0; regional: middle state: 87; regional: New England: 36; regional: north central: 173; regional: northwest: 28; regional: southern: 94; and regional: western: 39. See Table 8 for a comparison of control and treatment group colleges by accreditation.

Table 8

Comparison of Control and Treatment Group Colleges by Accreditation

Accreditation type	Control	C %	Treatment	T %
National/specialized	12	2.6%	1	1.7%
State	0	0.0%	0	0.0%
Regional: middle states	87	18.6%	18	30.0%
Regional: New England	36	7.7%	6	10.0%
Regional: north central	173	36.9%	24	40.0%
Regional: northwest	28	6.0%	4	6.7%
Regional: southern	94	20.0%	5	8.3%
Regional: western	39	8.3%	2	3.3%
Total	469	100.0%	60	100.0%

Whereas the treatment group of colleges was evenly split in relation to public and private not for profit, the control group was not; 442 of the colleges (94.2%) were public and 27 (5.8%) were private not for profit. Of the control colleges, 72 were classified as minority-serving institutions, 52 were categorized as Hispanic-serving institutions, one was classified as a historically Black college or university, one was labeled a tribal college, one was labeled a women's college, two were called land-grant colleges, and none was classified as an urban institution[10] (Carnegie Foundation for the Advancement of Teaching, 2009). The comparisons between the control and treatment group colleges can be seen in Table 9.

[10] A member of the Coalition of Urban and Metropolitan Universities (Carnegie Foundation for the Advancement of Teaching, 2009). "The Coalition of Urban and Metropolitan Universities (CUMU) is the longest- running and largest organization committed to serving and connecting the world's urban and metropolitan universities and their partners. CUMU focuses on strengthening institutions that are developing new responses to the pressing educational, economic, and social issues of the day" (CUMU, 2011).

Table 9

Comparisons Between Control Group and Treatment Group Colleges

Designation	Control	Treatment
Historically Black college or university	1	2
Tribal college	1	0
Women's college	1	1
Hispanic serving institution	52	7
Minority serving institution	72	11
Land-grant institution	2	2
Urban institution	0	3
Total	129	26

Even after reducing the control colleges, there was still an imbalance in a few categories of the three main variables of filtering (AA graduates, degree of urbanization, and accreditation type). This listing of associate's graduates for the control colleges indicates a steady expansion of associate's degree graduates. In 1987 these colleges graduated 175,318 associate's degree students, and in 2007 they graduated 282,797. Even though these colleges are considered control colleges for this particular study for the reasons outlined, a number of them began to expand into the baccalaureate mission after the time span considered for this study in 1997. See Table 10.

Table 10

Increase in Numbers of Graduates of Control Group Colleges From 1987 to 2007

Year	AA	BA	MA	PhD
1987	175,318	0	0	0
1988	178,432	0	0	0
1989	181,657	0	0	0
1990	189,602	0	0	0
1991	199,811	0	0	0
1992	210,018	0	0	0
1993	216,457	0	0	0
1994	222,072	0	0	0
1995	223,887	0	0	0
1996	223,980	0	0	0
1997	226,988	20	0	0
1998	227,221	12	0	0
2000	221,058	174	0	0
2001	226,906	314	0	0
2002	236,225	638	0	0
2003	246,122	987	0	0
2004	260,832	1,436	0	0
2005	271,983	1,645	0	0
2006	278,376	2,037	0	0
2007	282,797	2,224	0	0

Treatment group students—BPS dataset. Using the Electronic codebook (ECB) for the BPS dataset, the 60 hybrid college IPEDS codes were used to select all students who attended any of these colleges (See Appendix D for details on accessing data from the ECB). The process matched the IPEDS college code with the BPS ECB variable SI_SCHID. For selected variables, the ECB produced SPSS syntax, which was edited to produce the BPS treatment group database. The BPS dataset has 149 students who attended a hybrid college and were also surveyed as a part of the BPS study (NCES, 2011a).

Treatment group students—NELS dataset. Using the Electronic codebook (ECB) for the NELS dataset to identify students who attended the 60 hybrid colleges ended up being a

three-step process. The combination of the colleges and universities (ECB variable INCODE) where a student (ECB variable STU_ID) attended was represented as a new case. The ECB variable INCODE was matched to the corresponding IPEDS college ID (ECB variable UNITID) of the 60 hybrid colleges. Linking these two steps produced the list of student IDs (ECB variable STU_ID) of the students who attended a hybrid college. The ECB produced SPSS syntax for selected variables, which was edited to produce the treatment group NELS database.

To understand the NELS dataset, it is important to know that the prefix of the variable indicated the timing and chronology of the survey instrument. The data were captured over 12 years with (BY) occurring in the base year of the study, 1988, when the students being surveyed were in eighth grade. The (F1) prefix, indicating the first follow-up study, called NELS:88/90, was taken in 1990 when these students were likely to have been in the 10th grade. The (F2) prefix, representing the second follow-up study, called NELS:88/92, was captured in 1992 when these students were probably in their senior year of high school. The (F3) prefix, designating the third follow-up, titled NELS:88/94, occurred in 1994 when many of these students were sophomores in college. Finally, the (F4) prefix indicates the fourth follow-up study, called NELS:88/2000, which took place in 2000 when the students who graduated from high school and college at the usual time would have obtained their bachelor's degree four years earlier. The NELS dataset had 230 students who attended the 60 hybrid colleges who were also surveyed as a part of NELS study (NCES, 2011b).

Control group students—BPS dataset. Using the Electronic codebook (ECB) for the BPS dataset, I used the 469 control college IPEDS codes to select all students who attended any of these colleges. As with the treatment colleges, I matched the IPEDS college code with the BPS ECB variable SI_SCHID. The BPS dataset had 1,168 students who attended a control

college who also took part in the BPS study (NCES, 2011a). The ECB produced SPSS syntax for selected variables, which was edited to produce the control group BPS database.

Control group students—NELS dataset. Using the Electronic codebook (ECB) for the NELS dataset to identify students who attended the 469 control colleges again ended up being a three-step process. The combination of the colleges and universities (ECB variable INCODE) where a student (ECB variable STU_ID) attended was represented as a new case. The ECB variable INCODE was matched to the corresponding IPEDS college ID (ECB variable UNITID) of the 469 control colleges. Linking these two steps produced the list of student IDs (ECB variable STU_ID) of the students who attended a control college. The ECB produced SPSS syntax for selected variables, which was edited to produce the control group NELS database. The NELS dataset had 2,354 students who attended a control college and who also participated in the NELS study.

Summary of treatment and control groups. Combining the BPS treatment student database SPSS syntax with the BPS control student database SPSS syntax produced the BPS database, which I used to attempt to answer the research questions on transfer and baccalaureate attainment related to BPS data. In the same manner, I combined the NELS treatment syntax and the control syntax to produce the database I used to attempt to answer the research questions on baccalaureate attainment related to the NELS data.

Dependent and independent variables. The dependent variables for this study were transfer status (if a student transferred after starting at a control or treatment college) and baccalaureate attainment (whether they received a bachelor's degree). These dichotomous variables were used to track students who transferred after their initial enrollment from a hybrid or two-year college and whether they graduated with a baccalaureate degree.

Independent variables. The independent variables, taken from each of the two national databases, were included to control for issues that may confound the results, as consistent with research (Arbona & Nora, 2007; Bergin, Cooks, & Bergin, 2007; Dougherty & Kienzl, 2006; Lee & Frank, 1990; Nora & Rendon, 1990; Okun et al., 1996; Pascarella et al., 1998; Strauss & Volkwein, 2004; Tinto, 1993). For this study I grouped the independent variables into four categories in the same manner as Dougherty and Kienzl (2006): social background, other precollege personal characteristics, external demands as students enter college, and experiences during college. These independent variables of student characteristics and involvement in college activities have been commonly found in the literature and are typically controlled for in an effort to eliminate any confounding results (Dougherty & Kienzl, 2006; Flowers, 2006; Pascarella & Terenzini, 1991; Strauss & Volkwein, 2004). Whereas an individual's social background variables cannot be changed, the other three groupings (other precollege personal characteristics, external demands as students enter college, and experiences during college) can change or vary for individuals.

Social background variables. The first social background variable (Dougherty & Kienzl, 2006) was first college attended; coded as dichotomous, it compared those who attended a two-year or community college with those who attended a hybrid college as the reference group, called FSTCOL. This one independent variable was utilized in each of the four groupings as it is directly linked to each of the five research questions. The student's gender, parents' higher education level, and race were taken from both the BPS and NELS database and were dichotomous. Gender, comparing males to females as the indicator, was coded as binary and named GENDER (BPS) and F4SEX (NELS). Respondent parents' higher education level was dichotomous: first-generation students combined the groupings of parents with less than a high

school education with parents who had a high school education as the indicator; that group was compared with the groups of parents having some college education; parents with a bachelor's, and parents with more than a bachelor's combined in one group. This variable was named RPHED (see footnote on page 10). I measured race using four dichotomous dummy variables, with White being the indicator compared with Black, Hispanic or Latino, and Asian or Pacific Islander, and the variable was named RACENEW for BPS and F4RACEM for NELS. I did not evaluate American Indian or Alaska native students because of the small number in that group. Specific to the NELS dataset, socioeconomic status was a composite variable in centiles that combined education, occupations, and incomes of the respondent parents (NCES, 2008b). This variable was called BYSES. Specific to the BPS dataset, I used family income, which was placed in log form and centered by subtracting the family income variable from its mean (Dougherty & Kienzl, 2006). This variable was named CENLOGINC. Age categories were coded as AGECAT and were dichotomous, 16- to 20-year-olds being the reference group that was compared to 21-year-olds and older.

Other precollege personal characteristics. The second group of independent variables was other precollege personal characteristics (Dougherty & Kienzl, 2006) with the following variables taken from both the BPS and NELS datasets as explained. The first variable called FSTCOL was first college attended, which was coded as dichotomous, comparing those who attended a two-year or community college with those who attended a hybrid college. The educational expectation of obtaining a bachelor's degree variable or EDEXPBA was coded binary; it compared those who did not have an expectation of obtaining a bachelor's degree with those who did as the indicator variable. The high school degree or equivalent variable named HSDEG was coded binary; those not receiving a high school diploma were compared with those

who did as the indicator. The academic ability compared to others variable called COMPACA was coded dichotomous and it compared those who believed they had above average academic ability as the indicator with others who did not believe they were above average.

Dougherty and Kienzl (2006) used remedial courses taken in college as a proxy to indicate college course readiness. This is why they were included in other precollege personal characteristics even though these courses were taken in college. Specific to the BPS dataset, I used the following variables: Remedial math or REMATH was coded as dichotomous comparing those who took any remedial math in college with those who had none as the indicator. Remedial reading was named REREAD; it was coded dichotomous, and it compared those who had taken any remedial reading in college with those who had taken none as the reference group. Remedial study skills were named RESTSK; the variable was coded dichotomous, and it compared those who had any instruction in remedial study skills in college with those who had had none as the indicator. Remedial writing was named REWRITE; it was coded dichotomous, and it compared those who had any remedial study skills instruction in college with those who had had none as the reference group.

Specific to the NELS dataset, I used remedial English or REMENGL, which was coded dichotomous, and it compared those who had taken any remedial English (indicator variable) with those who had taken none. Remedial math was named REMATH; it was coded dichotomous, and it compared those who had any remedial math or the reference group with those who had had none. In the same manner as Dougherty and Kienzl (2006), scholastic math test (SATM) was placed in log form and centered by subtracting the LOGSATM variable from its mean in an effort to better understand the effect of this variable on the dependent variable of bachelor's degree attainment. This variable was named CENLOGSATM. Scholastic verbal test

(SATV) was placed in log form and centered by subtracting the LOGSATV variable from its mean in an effort to better understand the effect of this variable on the dependent variable of bachelor's degree attainment. This variable was named CENLOGSATV.

External demands as students enter college. The third group of independent variables was external demands as students enter college variables (Dougherty & Kienzl, 2006), and for both BPS and NELS the first variable was first college attended; coded as dichotomous, it compared those who attended a two-year or community college with those who attended a hybrid college as the indicator, called FSTCOL. The marital status variable was named MARRIED and was coded binary; for the BPS it compared those who were married or separated with those who were never married as the reference group. For the NELS it compared those who were ever married or in a marriage-like relationship with those who were never married (indicator variable). Students who had dependent children were compared with those who did not (indicator variable); they were coded dichotomous and the variable was named CHILDREN. In the same manner as Dougherty and Kienzl (2006), the hours worked per week variable was named WORKCAT for the BPS and HRSWKCAT for the NELS, and was categorized into three distinct groups of 1 to 20 hours, 21 to 39 hours, and more than 40 hours. The BPS had an additional variable of students who were single parents that was coded binary, with those who had children as the indicator compared with those who did not. The variable was named SING8990.

Experiences during college. The fourth group of independent variables was experiences during college as an effort to indicate the level of academic and social engagement (Dougherty & Kienzl, 2006) from both BPS and NELS; the initial covariate was first college attended; coded as

dichotomous, it compared those who attended a two-year or community college to those who attended a hybrid college as the indicator, called FSTCOL.

From both datasets students' attendance status of full-time (reference group) versus part-time was coded in a dichotomous manner and the variable was called ATTENDST for the BPS and ENRLSTAT for the NELS. The major being vocational was set as the indicator variable, and it was compared to the major being academic; the variable was binary and was called VOCACA for the BPS and VOCTECH for the NELS dataset.

From the BPS dataset, students who received grades of mostly C's, D's, and F's were compared in a binary manner with the indicator group, or those more academically engaged who had received mostly A's and B's. This independent variable was named GPAAB. Whether or not students met with their advisor concerning academic matters was called TALKADV and was coded in a binary manner, comparing those who had so met as the reference group to those who had not. The next independent variable was called TALKFA and it indicated if students talked with their faculty about academic matters as the indicator group versus those who had not. This was also coded in a dichotomous manner. Whether or not students attended career-related lectures was binary; the reference group of those students who had attended was compared with those who had not. This variable was called ATLECT. The next independent variable was called STUDYGR, and it compared those who were in study groups as the indicator with other students who were not in study groups, in a dichotomous manner. Students who had contact with faculty outside of the classroom, the indicator group, were compared with those who had not. This variable was named CONTACFAC and was coded binary. The next independent variable was called CLUBMBR, and it compared those students who participated in school clubs, the indicator group, with those who did not, in a binary manner. Students who went places with

friends from school, the indicator group, was called GOPLAC, and was compared in a binary manner with those who did not. Those students who indicated that they were in student assistance centers or programs (reference group) were compared with those who indicated that they were not. This variable was coded dichotomous and was called STUCENTER. The final experience during college variable was called INTRAMRLS, and it compared in a binary manner those students who participated in intramural activities, as the indicator variable, with those who did not.

From the NELS dataset, whether or not students were involved in student government or politics was called STUGOV and was coded in a binary manner, comparing those who were involved (indicator variable) with those who were not. The next independent variable was called SOCCLUB, and it indicated if students were involved in social clubs such as fraternities or sororities. Those involved in social clubs was the reference group and was also coded in a dichotomous manner. Whether or not students were involved in intercollegiate athletics was binary, and the variable compared those students who were involved or the indicator group with those who were not; the variable was called VARSATH. The next independent variable was called OTHATH, and it compared those who were involved in other intercollegiate athletics (reference group) with those who were not in a dichotomous manner. The variable whether or not students were involved in intramural athletics compared those who were as the reference group with those who were not. The variable was named INTRAMU and was coded binary. The last independent variable was called VOLOTST, and it compared those students who did participate in volunteer service (indicator group) with other students with those who did not in a binary manner.

Data Analysis

Using a quasiexperimental design with an ex post facto, causal-comparative case control analysis (Campbell & Stanley, 1963; Sprinthall, 2003), this study sought to understand how starting college at a hybrid college, one that offers subbaccalaureate and baccalaureate degrees (treatment group), differed from starting out at a two-year college (control group) in relation to transfer rates and baccalaureate attainment while controlling for a number of confounding independent variables.

I used chi-squared analysis to determine the statistical significance between the two groups in relation to control or treatment attendance and transfer status, and control or treatment attendance and degree attainment (Sprinthall, 2003). I used descriptive, Pearson correlation, and chi-squared analyses to understand the differences between the treatment and control groups in relation to transfer and baccalaureate attainment. Additionally, I used bivariate analysis via logistic regression to further understand transfer and baccalaureate attainment overall by controlling for students' background characteristics of social background, other precollege personal characteristics, external demands as students enter college, and experiences during college using the same independent variable grouping breakdown as Dougherty and Kienzl (2006). These student characteristics and involvement in college activities independent variables have been commonly found in literature (Flowers, 2006; Pascarella & Terenzini, 1991; Plank & Jordan, 2001; Provasnik & Planty, 2008; Roksa, 2010; Strauss & Volkwein, 2004) and should be controlled in an effort to present compelling conclusions (Dougherty, 1992).

While controlling for these background differences it was necessary for me to retain the four groupings versus having one overall regression in an effort to meet the minimum requirement for logistic regression of having at least 20 cases per predictor (Leech et al., 2008).

This was necessary because I found a limited number of identifiable hybrid or treatment college cases that were also were found in the BPS and NELS studies.

Statistical analysis. Formulas were created for running logistic regression to show the two block steps for the five research questions and therefore each of four groupings of independent variables (social background, other precollege personal characteristics, external demands as students enter college, and experiences during college).

Statistical analysis of research question 1. How does beginning at a hybrid college that offers subbaccalaureate and baccalaureate degrees differ from beginning at a two-year college in relation to transfer rates and baccalaureate attainment?

For this first research question, descriptive statistics, two-by-two chi-squared analysis, two-by-four chi-squared analysis, and logistic regression were used to understand the relationship that the main independent variables of attending a hybrid college versus a two-year college had on the dependent variables of transfer status and baccalaureate attainment. The logistic regression models used to predict the log odds were as follows (Keith, 2006; Sprinthall, 2003):

$$\text{Logit}(p_1) = \log[p_1/(1-p_1)] = a_1+b_1H_1$$

$$\text{Logit}(p_2) = \log[p_2/(1-p_2)] = a_2+c_2H_2$$

Where "p_1" represented the probability of "Y_1" being equal to 1, "Y_1" was the dependent variable of mean predicted transfer status, with 1 corresponding to transferring and 0 not transferring; "a_1" was a constant or the value of Y_1 when H_1 was zero; "b_1" was the unstandardized regression coefficient; and "H_1" was dichotomous, with 1 representing attending a hybrid college and 0 attending a two-year college.

Where "p_2" represented the probability of "Y_2" being equal to 1, "Y_2" was the dependent variable of mean predicted baccalaureate attainment status, with 1 corresponding to completing a bachelor's degree and 0 not completing; "a_2" was a constant or the value of "Y_2" when "H_2" was zero, "c_2" was the unstandardized regression coefficient, and "H_2" was dichotomous, with 1 representing attending a hybrid college and 0 attending a two-year college. Logistic regression results would show if there was a statistical significant difference in attending a hybrid college versus a two-year college on the dependent variables of transfer and baccalaureate attainment.

Statistical analysis of research question 2. Controlling for social background variables (race, gender, age, parents' higher education level, and parents' socioeconomic status - SES), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

Again, I used logistic regression to analyze the relationship that the main independent variables of attending a hybrid college versus a two-year college had on the dependent variables of transfer status (BPS dataset only) and baccalaureate attainment (BPS dataset and NELS dataset), while controlling for a number of independent social background characteristics (race, gender, age, parents' higher education level, and parents' socioeconomic status). In the first block of the logistic regression, treatment/hybrid college attendance was added to establish a baseline. In the second block all of the other independent variables were inserted to the equation to enable changes to be observed in the relationship to the dependent variable. Since the additional independent variables are added in one block the order entered was immaterial (Keith, 2006). The equations for these logistic regressions in relation to transfer status were as follows (Keith, 2006; Sprinthall, 2003):

Transfer social background variables block 1.

$$\text{Logit}(p_1) = \log[p_1/(1-p_1)] = a_1+b_1H_1$$

Transfer social background variables block 2.

$$\text{Logit}(p_1) = \log[p_1/(1-p_1)] = a_1+b_1H_1+\text{RACE+GENDER+AGE+FAMILY INCOME/SES COMPOSITE}$$

Where "p_1" represented the probability of "Y_1" being equal to 1, "Y_1" was the dependent variable of mean predicted transfer status, with 1 corresponding to transferring and 0 not transferring; "a_1" was a constant or the value of "Y_1" when "H_1" is zero, "b_1" was the unstandardized regression coefficient, and "H_1" was dichotomous, with 1 representing attending a hybrid college and 0 attending a two-year college. In block 2 the additional independent variables were added. The family income variable was with the BPS dataset and the SES composite was used with the NELS dataset.

The equations for these logistic regressions in relation to baccalaureate attainment were as follows (Keith, 2006; Sprinthall, 2003):

Baccalaureate attainment social background variables block 1.

$$\text{Logit}(p_2) = \log[p_2/(1-p_2)] = a_1+b_1H_1$$

Baccalaureate attainment social background variables block 2.

$$\text{Logit}(p_2) = \log[p_2/(1-p_2)] = a_1+b_1H_1+\text{RACE+GENDER+AGE+FAMILY INCOME/SES COMPOSITE}$$

Where "p_2" represented the probability of "Y_2" being equal to 1, "Y_2" was the dependent variable of mean predicted baccalaureate attainment status, with 1 corresponding to obtaining a bachelor's degree and 0 not obtaining one; "a_1" was a constant or the value of "Y_1" when "H_1" was zero, "b_1" was the unstandardized regression coefficient, and "H_1" was dichotomous, with 1 representing attending a hybrid college and 0 attending a two-year college. In block 2 the

additional independent variables were added. The family income variable was with the BPS dataset and the SES composite was used with the NELS dataset. Logistic regression results would show if there was a statistical significant difference in attending a hybrid college versus a two-year college on the dependent variables of transfer and baccalaureate attainment even after the social background variables were added and controlled for.

Statistical analysis of research question 3. Controlling for other precollege personal characteristics (first college attended, high school degree or equivalent, remedial math, remedial reading, remedial study skills, remedial writing, education expectations of a bachelor's degree or higher, and above average academic ability as compared to others), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

For the third research question relating to other precollege personal characteristics, I again used logistic regression in a similar manner as question two to analyze the relationship that the main independent variables of attending a hybrid college versus a two-year college had on the dependent variables of transfer status (BPS dataset only) and baccalaureate attainment (BPS dataset and NELS dataset), while controlling for a number of independent variables. In the first block of the logistic regression, treatment/hybrid college attendance was added to establish a baseline. In the second block all of the other independent variables were inserted to the equation to enable changes to be observed in the relationship to the dependent variable. The equations for these logistic regressions in relation to transfer status were as follows (Keith, 2006; Sprinthall, 2003):

Transfer other precollege personal characteristics variables block 1.

$$\text{Logit}(p_1) = \log[p_1/(1-p_1)] = a_1+b_1H_1$$

Transfer other precollege personal characteristics variables block 2.

$$\text{Logit}(p_1) = \log[p_1/(1-p_1)] = a_1+b_1H_1+ \text{OTHER PRECOLLEGE PERSONAL CHARACTERISTICS VARIABLES}$$

Where "p_1" represented the probability of "Y_1" being equal to 1, "Y_1" was the dependent variable of mean predicted transfer status, with 1 corresponding to transfer and 0 not transferring; "a_1" was a constant or the value of "Y_1" when "H_1" is zero, "b_1" was the unstandardized regression coefficient, and "H_1" was dichotomous, with 1 representing attending a hybrid college and 0 attending a two-year college. For the BPS dataset, the other precollege personal characteristics variables used were: high school degree or equivalent, remedial math, remedial reading, remedial study skills, remedial writing, education expectation of a bachelor's degree, and above average academic ability as compared to others. For the NELS dataset, the other precollege personal characteristics variables used were: centered log10 of SAT math, centered log10 of SAT verbal, high school degree, remedial English, remedial math, and expectation of a bachelor's degree.

The formulas relating to question three were then redone in a similar manner with the dependent variable being baccalaureate attainment. The equations for these logistic regressions in relation to baccalaureate attainment are as follows (Keith, 2006; Sprinthall, 2003):

Baccalaureate attainment other precollege personal characteristics variables block 1.

$$\text{Logit}(p_2) = \log[p_2/(1-p_2)] = a_1+b_1H_1$$

Baccalaureate attainment other precollege personal characteristics variables block 2.

$$\text{Logit}(p_2) = \log[p_2/(1-p_2)] = a_1+b_1H_1+ \text{OTHER PRECOLLEGE PERSONAL CHARACTERISTICS VARIABLES}$$

Where "p_2" represented the probability of "Y_1" being equal to 1, "Y_1" was the dependent variable of mean predicted baccalaureate attainment, with 1 corresponding to obtaining a bachelor's degree and 0 not obtaining one; "a_1" was a constant or the value of "Y_1" when "H_1" was zero, "b_1" was the unstandardized regression coefficient, and "H_1" was dichotomous, with 1 representing attending a hybrid college and 0 attending a two-year college. For the BPS dataset, the other precollege personal characteristics variables used were: high school degree or equivalent, remedial math, remedial reading, remedial study skills, remedial writing, education expectation of a bachelor's degree, and above average academic ability as compared to others. For the NELS dataset, the other precollege personal characteristics variables used were: centered log10 of SAT math, centered log10 of SAT verbal, high school degree, remedial English, remedial math, and expectation of a bachelor's degree.

Statistical analysis of research question 4. Controlling for external demands as students enter college (first college attended, married, children, single parent, and work categories), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

For the fourth research question relating to external demands as students enter college, I again used logistic regression in a similar manner to analyze the relationship that the main independent variables of attending a hybrid college versus a two-year college had on the dependent variables of transfer status (BPS dataset only) and baccalaureate attainment (BPS dataset and NELS dataset), while controlling for a number of independent variables. In the first block of the logistic regression, treatment/hybrid college attendance was added to establish a baseline. In the second block all of the other independent variables were inserted to the equation to enable changes to be observed in the relationship to the dependent variable. The equations for

these logistic regressions in relation to transfer status were as follows (Keith, 2006; Sprinthall, 2003):

Transfer external demands as students enter college variables block 1.

$$\text{Logit}(p_1) = \log[p_1/(1-p_1)] = a_1+b_1H_1$$

Transfer external demands as students enter college variables block 2.

$$\text{Logit}(p_1) = \log[p_1/(1-p_1)] = a_1+b_1H_1+ \text{EXTERNAL DEMANDS AS STUDENTS ENTER COLLEGE VARIABLES}$$

Where "p_1" represented the probability of "Y_1" being equal to 1, "Y_1" was the dependent variable of mean predicted transfer status, with 1 corresponding to transfer and 0 not transferring; "a_1" was a constant or the value of "Y_1" when "H_1" is zero, "b_1" was the unstandardized regression coefficient, and "H_1" was dichotomous, with 1 representing attending a hybrid college and 0 attending a two-year college. For the BPS dataset, the following external demands as students enter college variables used were: first college attended, married, children, single parent, and work categories. For the NELS dataset, the following external demands as students enter college variables used were: first college attended, married ever or marriage-like relationship, dependent children, and hours work categories.

The formulas relating to question four were then redone in a similar manner with the dependent variable being baccalaureate attainment. The equations for these logistic regressions in relation to baccalaureate attainment are as follows (Keith, 2006; Sprinthall, 2003):

Baccalaureate attainment external demands as students enter college variables block 1.

$$\text{Logit}(p_2) = \log[p_2/(1-p_2)] = a_1+b_1H_1$$

Baccalaureate attainment external demands as students enter college variables block 2.

$$\text{Logit}(p_2) = \log[p_2/(1-p_2)] = a_1 + b_1H_1 + \text{EXTERNAL DEMANDS AS STUDENTS ENTER COLLEGE VARIABLES}$$

Where "p_2" represented the probability of "Y_1" being equal to 1, "Y_1" was the dependent variable of mean predicted baccalaureate attainment, with 1 corresponding to obtaining a bachelor's degree and 0 not obtaining one; "a_1" was a constant or the value of "Y_1" when "H_1" was zero, "b_1" was the unstandardized regression coefficient, and "H_1" was dichotomous, with 1 representing attending a hybrid college and 0 attending a two-year college. For the BPS dataset, the following external demands as students enter college variables used were: first college attended, married, children, single parent, and work categories. For the NELS dataset, the following external demands as students enter college variables used were: first college attended, married ever or marriage-like relationship, dependent children, and hours work categories.

Statistical analysis of research question 5. Controlling for experiences during college (first college attended, students attendance status, whether major was academic or vocational, GPA – A's and B's, academic integration, and social integration), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

For the fifth research question relating to experiences during college, I again used logistic regression in the same way as the prior research questions to analyze the relationship that the main independent variables of attending a hybrid college versus a two-year college had on the dependent variables of transfer status (BPS dataset only) and baccalaureate attainment (BPS dataset and NELS dataset), while controlling for a number of independent variables. In the first block of the logistic regression, treatment/hybrid college attendance was added to establish a baseline. In the second block all of the other independent variables were inserted to the equation

to enable changes to be observed in the relationship to the dependent variable. The equations for these logistic regressions in relation to transfer status were as follows (Keith, 2006; Sprinthall, 2003):

Transfer experiences during college variables block 1.

$$\text{Logit}(p_1) = \log[p_1/(1-p_1)] = a_1+b_1H_1$$

Transfer experiences during college variables block 2.

$$\text{Logit}(p_1) = \log[p_1/(1-p_1)] = a_1+b_1H_1+ \text{EXPERIENCES DURING COLLEGE VARIABLES}$$

Where "p_1" represented the probability of "Y_1" being equal to 1, "Y_1" was the dependent variable of mean predicted transfer status, with 1 corresponding to transfer and 0 not transferring; "a_1" was a constant or the value of "Y_1" when "H_1" is zero, "b_1" was the unstandardized regression coefficient, and "H_1" was dichotomous, with 1 representing attending a hybrid college and 0 attending a two-year college. For the BPS dataset, the following experiences during college variables used were: first college attended, students attendance status, whether major was academic or vocational, GPA – A's and B's, met with advisor concerning academic plans, talked with faculty about academic matters, attended career-related lectures, in study groups with other students, contact with faculty outside class, participated in school clubs, went places with friends from school, in student assistance centers/programs, and participated in intramural activities. For the NELS dataset, the following experiences during college variables used were: first college attended, enrollment status, vocational/technical courses at any school, student government/politics, social clubs – fraternities/sororities, varsity intercollegiate athletics, intramural athletics, volunteer – other students.

The formulas relating to question five were then redone in a similar manner with the dependent variable being baccalaureate attainment. The equations for these logistic regressions in relation to baccalaureate attainment are as follows (Keith, 2006; Sprinthall, 2003):

Baccalaureate attainment experiences during college variables block 1.

$$\text{Logit}(p_2) = \log[p_2/(1-p_2)] = a_1+b_1H_1$$

Baccalaureate attainment experiences during college variables block 2.

$$\text{Logit}(p_2) = \log[p_2/(1-p_2)] = a_1+b_1H_1+ \text{EXPERIENCES DURING COLLEGE VARIABLES}$$

Where "p_2" represented the probability of "Y_1" being equal to 1, "Y_1" was the dependent variable of mean predicted baccalaureate attainment, with 1 corresponding to obtaining a bachelor's degree and 0 not obtaining one; "a_1" was a constant or the value of "Y_1" when "H_1" was zero, "b_1" was the unstandardized regression coefficient, and "H_1" was dichotomous, with 1 representing attending a hybrid college and 0 attending a two-year college. For the BPS dataset, the following experiences during college variables used were: first college attended, students attendance status, whether major was academic or vocational, GPA – A's and B's, met with advisor concerning academic plans, talked with faculty about academic matters, attended career-related lectures, in study groups with other students, contact with faculty outside class, participated in school clubs, went places with friends from school, in student assistance centers/programs, and participated in intramural activities. For the NELS dataset, the following experiences during college variables used were: first college attended, enrollment status, vocational/technical courses at any school, student government/politics, social clubs – fraternities/sororities, varsity intercollegiate athletics, intramural athletics, volunteer – other students.

Limitations of the Study

Whereas the major strength of this study is that it provides some understanding of a hitherto-unstudied phenomenon, it has some limitations. These areas related to four general areas of sample size, potential differences between control and treatment groups, the NCES datasets, and the independent variable grouping constructs.

Treatment group sample size. Having 149 students from the BPS dataset and 230 students from the NELS dataset may potentially impact the outcome, power, or ability to reject a false null hypothesis (Keith, 2006), and results of this study. Whereas the analysis completed by Dougherty and Kienzl (2006), the general concept of which this study adopted, had a much higher number of students (BPS – 653 and NELS – 2,660) and only looked at two-year students and transfer, this study looked at a smaller subgroup of transfer and baccalaureate attainment, comparing two-year to hybrid college attendance. Additional caution should be considered because of arbitrarily deciding that associate's graduates made up a core of at least 20% of total degrees awarded. Because of the overall small sample size, I did not evaluate American Indian or Alaska native students because of the very small number in that group. The issue of overall treatment group sample size might be mitigated by applying the BPS and NELS weights as a part of the analysis, as each of the datasets is nationally representative (NCES, 2008a, 2008b). Utilizing weights were beyond the scope of this dissertation.

Imbalances between control and treatment colleges. The process of aligning the control and treatment colleges for the schools from which students were selected for this study left imbalances in a few categories of the three main variables of filtering (AA graduates, degree of urbanization, and accreditation type). Though I took these imbalances into consideration when

selecting colleges for the control group, they may confound the results if the control and treatment groups were to be found dissimilar (Keith, 2006).

NCES datasets. Whereas the BPS and NELS datasets provided reliable results on the main dependent variables of transfer and baccalaureate attainment, and on the key independent variable of first college attended, some of the independent variables came from self-reported responses that relied on memory recall and were biased (marriage) in the way the questions were framed (Dey et al., 1997). Additionally, utilizing student-tracking data from approximately 30 years ago to 15 years ago might be considered problematic due to the age of the data. Whereas these data provided a view of the early days of hybrid colleges, significant changes in the higher education landscape have subsequently occurred in relation to overall enrollment, attendance status, gender makeup, control of institution, race/ethnicity, and the number of hybrid colleges (U.S. Department of Education, 2014a, 2014b).

Independent variable grouping constructs. The independent variable groupings, particularly the experiences during college constructs of academic and social engagement were not evaluated for efficacy nor could I find literature to support validity beyond Dougherty and Kienzl (2006). Since this study was modeled after Dougherty and Kienzl (2006) and utilized the same groupings caution in interpretation is warranted.

Chapter 4

Through this exploratory study I sought to further understand differences in transfer rates and baccalaureate attainment between students who began their post-secondary education at hybrid colleges that offered baccalaureate degrees while retaining their subbaccalaureate offerings and those who began at two-year colleges (Lorenzo, 2005). If significant differences existed they would suggest the need to further investigate the factors contributing to these findings. The following results chapter: (a) provides an introduction and present the research questions; (b) reports the BPS descriptive and chi-squared results on transfer and baccalaureate attainment; (c) controls for student differences by analyzing; the social background variables, other precollege personal characteristics variables, the external demands as students enter college variables, and the experiences at college variables; first from the BPS and then from the NELS; and (d) summarizes the findings.

In this study I sought to answer the following research questions:

1. How does beginning at a hybrid college that offers subbaccalaureate and baccalaureate degrees differ from beginning at a two-year college in relation to transfer rates and baccalaureate attainment?

2. Controlling for social background variables (first college attended, race, gender, age, parents' higher education level, and parents' socioeconomic status - SES), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

3. Controlling for other precollege personal characteristics (first college attended, high school degree or equivalent, remedial math, remedial reading, remedial study skills, remedial writing, education expectations of a bachelor's degree or higher, and above

average academic ability as compared to others), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

4. Controlling for external demands as students enter college (first college attended, married, children, single parent, and work categories), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

5. Controlling for experiences during college (first college attended, students attendance status, whether major was academic or vocational, GPA – A's and B's, academic integration, and social integration), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college?

BPS Dataset Descriptive Data and Chi-Squared Analysis on Transfer and Baccalaureate Attainment

Since the sample size for those who attended hybrid colleges and also participated in the BPS study was limited, I initially used descriptive statistics and chi-squared analysis to gain an understanding of the research questions for those who began at, transferred from, and obtained degrees at either a two-year (control) or a hybrid (treatment) college.

BPS transfer status-first college attended in 1990 through follow-up in 1994. A total of 430 students attended either a two-year control (86%) or hybrid treatment (14%) college in 1990. Students who attended hybrid colleges transferred at lower rates than those who attended two-year colleges (17% vs. 32%). Transfer status at the first college attended through the 1994 BPS survey is represented in Table 11.

Table 11

BPS Dataset: Descriptive Statistics- Transfer Status - First College Attended in 1990 Through the 1994 BPS Survey

		Control			Treatment			Total	
Transfer status	Count*	Row %	Column %	Count*	Row %	Column %	Count*	Row %	Column %
Did not transfer	250	83.33%	67.57%	50	16.67%	83.33%	300	100.00%	69.77%
Transferred	120	92.31%	32.43%	10	7.69%	16.67%	130	100.00%	30.23%
Total	370	86.05%	100.00%	60	13.95%	100.00%	430	100.00%	100.00%

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

A two-by-two chi-squared analysis was performed to determine if there was a significant relationship between attending a two-year (control) or hybrid (treatment) college and transfer status from first college attended through the 1994 BPS survey. A significant difference was found between the observed and expected values ($\chi^2 = 6.084$, $df = 1$, $n = 430$, $p < .05$), with more participants than expected transferring from those who began at a two-year (control) (120 observed vs. 112 expected) and less than expected for the hybrid (treatment) (10 observed vs. 18 expected). Attending a hybrid college decreased the likelihood of transferring, therefore improving the probability of obtaining a baccalaureate degree as those who transfer have a reduced possibility of obtaining a bachelors degree (Dougherty, 2001; Lavin & Crook, 1990; Pascarella & Terenzini, 1991; Pierson et al., 2003; Whitaker & Pascarella, 1994).

Breaking these numbers down further provides an even clearer picture of how students navigated the differing pathways towards obtaining any degree. For this variable continuous enrollment was defined as having no interruptions of more than four months, and if a student transferred to another institution, but then returned to the first, they were considered a stop-out and were excluded (NCES, 2008a). The descriptive statistics presented in Table 12 represent the

control and treatment students and if they did not transfer labeled internal or transferred with differing levels of stopping out and degree attainment (certificate, associate, and baccalaureate).

Table 12

BPS Dataset: Transfer, Persistence and Attainment overall-First College Attended Control or Treatment Student in 1990-Through the 1994 BPS Survey

	Control	Treatment	Total
Internal persisted attained	19.8%	38.8%	22.7%
Internal persisted	1.4%	6.0%	2.1%
Internal noncontinuous-attained	4.1%	4.5%	4.1%
Internal noncontinuous-still enrolled	3.8%	1.5%	3.4%
Internal noncontinuous-not enrolled	8.1%	1.5%	7.1%
Internal left without return	31.2%	26.9%	30.5%
Transfer persisted attained	8.1%	9.0%	8.3%
Transfer persisted	2.2%	0.0%	1.8%
Transfer noncontinuous-attained	7.0%	3.0%	6.4%
Transfer noncontinuous-still enrolled	3.3%	0.0%	2.8%
Transfer noncontinuous-not enrolled	8.1%	9.0%	8.3%
Transfer left without return	3.0%	0.0%	2.5%
Total	100.0%	100.0%	100.0%

* Counts are not included due to small sample sizes and IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

Students who began at hybrid treatment colleges in 1990 stayed at the same college or transferred to another college and completed a degree by 1994 at higher percentages than those who began at two-year control colleges. This occurred in every subgroup where students attained a degree except for the transfer noncontinuous-attained group (Internal persisted attained 38.8% versus 19.8%, Internal noncontinuous-attained 4.5% versus 4.1%, Transfer persisted attained 9.0% versus 8.1%, Transfer noncontinuous-attained 3.0% versus 7.0%).

BPS degree attainment-first college attended in 1990 through follow-up in 1994.

Students earned all degrees (certificate, associate's, and baccalaureate) at higher percentages at

the first college attended in 1990 when they began at a hybrid (treatment) versus a two-year (control) college. Whereas 57% (40 of 70) of the students who attended a hybrid (treatment) college did not earn any degree, 76% (280 of 370) of two-year (control) students did not earn any degree. Students who began at hybrid versus two-year colleges earned certificates (6% vs. 4%) and associate's degrees (21% vs. 20%) at higher rates at that initial college. Critical to this study, however, is that an additional 16% of those attending hybrid colleges earned baccalaureate degrees at that initial hybrid college within four years. This outcome would not have been an option for the two-year college attendees since they need to transfer to a four-year institution to secure a baccalaureate degree. Since many two-year (control) students begin with the intention to transfer (Brint & Karabel, 1989; Dougherty, 2001; Dougherty & Kienzl, 2006; Hoachlander et al., 2003) it is important to evaluate the results from both the first college attended and a combination of the first and second degree attained.

BPS degree attainment combining first and second degree attained. In relation to first and second degree obtained after starting at a two-year (control) or a hybrid (treatment) college in 1990, 440 students were included in the analysis.[11] Students who began at a hybrid college attained certificates, associate's, and bachelor's degrees at a higher percentages than those who began at a two-year college by 1994 (certificate: 13% vs. 6%, associate's: 25% vs. 19%, bachelor's: 25% vs. 6%). Whereas 38% of the students who attended a hybrid (treatment) college did not earn any degree, 69% of two-year (control) students did not earn any degree. See Table 13.

[11] IES rounding procedures account for the differences in the transfer total subjects (N=430) and degree attained subjects (N=440).

Table 13

BPS Dataset: Descriptive Statistics-First and Second Degree Attained After Starting at a Two-Year (Control) or Hybrid (Treatment) College

	Control			Treatment			Total		
1st and 2nd degree	Count*	Row %	Column %	Count*	Row %	Column %	Count*	Row %	Column %
None	250	89.29%	69.44%	30	10.71%	37.50%	280	100.00%	63.64%
Certificate	20	66.67%	5.56%	10	33.33%	12.50%	30	100.00%	6.82%
Associate's degree	70	77.78%	19.44%	20	22.22%	25.00%	90	100.00%	20.45%
Bachelor's degree	20	50.00%	5.56%	20	50.00%	25.00%	40	100.00%	9.09%
Total	360	81.82%	100.00%	80	18.18%	100.00%	440	100.00%	100.00%

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

A two-by-four chi-squared analysis was performed to determine if there was a significant relationship between starting at a two-year (control) or hybrid (treatment) college in 1990 and the first and second degree attained during postsecondary education by 1994. A significant difference was found between the observed and expected values ($\chi^2 = 43.336$, $df = 3$, $n = 440$, $p < .05$), with more hybrid (treatment) participants than expected obtaining all levels of degrees and the opposite being true for those two-year (control) participants. See Table 14.

Table 14

BPS Dataset: Chi Squared Results-Observed Versus Expected—First and Second Degree Attained After Starting at a Two-year (Control) or Hybrid (Treatment) College

Both 1st and 2nd degree	None	Certificate	AA	BA	Total			
Control *	250 (a)	20 (b)	70 (c)	20 (d)	360			
Treatment *	30 (e)	10 (f)	20 (g)	20 (h)	80			
Total *	280	30	90	40	440			
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Observed	250	20	70	20	30	10	20	20
Expected	229	25	74	33	51	5	16	7

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10. Chi Squared output from Microsoft Excel.

BPS Degree progression overall. After I evaluated overall degree attainment of any path (BA, AA then BA, certificate then BA, certificate then AA-then BA) a clear picture emerged of the differences between those who began at two-year (control) versus at a hybrid (treatment) college in 1990. Students who began at hybrid colleges had increased degree attainment at every level (certificate, associate's, and baccalaureate) in their degree progression by 1994, regardless of their path. A key component to this dissertation is the difference between the control and treatment groups in baccalaureate attainment overall: regardless of whether a student's first degree was a bachelor's, whether the route included a subbaccalaureate, or whether they had received that degree at their first college, attended a second, or acquired it after transferring. Students who started at a hybrid versus a two-year college in 1990 obtained the baccalaureate as their first degree earned at a higher percentage (24% vs. 4%) by 1994. Students who started at a hybrid versus a two-year college were also more likely to attain a subbaccalaureate before obtaining their bachelor's degree regardless of the path they took-associate's then baccalaureate (9% vs. 6%), and, for those who attained a certificate, then associate's then bachelor's (2% vs. 0%.) See Table 15.

Table 15

BPS Dataset: Descriptive Statistics Overall Degree Progression After Starting at a Two-year (Control) or Hybrid (Treatment) College

	Two-year (Control) %	Hybrid (Treatment) %	Total %
Attained BA	3.8	23.9	6.9
Attained AA, then BA	6.0	9.0	6.4
Attained AA, enrolled toward BA	3.5	3.0	3.4
Attained AA, not enrolled toward BA	14.1	11.9	13.8
Attained cert, then BA	0.0	0.0	0.0
Attained cert, then AA, then BA	0.0	1.5	0.2
Attained cert, then AA, enr. toward BA	0.0	0.0	0.0
Attained cert, then AA, not enr. to BA	0.3	1.5	0.5
Attained cert, enrolled toward BA	0.3	0.0	0.2
Attained cert, enrolled toward AA	0.5	0.0	0.5
Attained cert, not enr. toward AA or BA	10.6	4.5	9.6
No degree, enrolled toward BA	4.6	7.5	5.0
No degree, enrolled toward AA	5.1	0.0	4.4
No degree, enrolled toward cert	0.5	0.0	0.5
No degree, not enr. toward formal degree	50.7	37.3	48.6

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

Ensuring that students' background and experiences during college were similar for those who began at hybrid (treatment) versus two-year (control) colleges would not only help in answering the research questions, but would show if students who began at the two-year (control) and hybrid (treatment) were similar to each other by controlling for any differences.

Controlling for Differences in Student Backgrounds and Experiences During College

In an attempt to control for background differences between those in the control and treatment groups from the first college attended for transfer status and baccalaureate attainment overall, additional independent variables were considered that are generally found in prior literature (Flowers, 2006; Pascarella & Terenzini, 1991; Strauss & Volkwein, 2004). I parsed the data into four groupings: social background, other precollege personal characteristics, external

demands as students enter college, and experiences during college in the same sub-group manner as Dougherty and Kienzl (2006). I had to retain these four groups throughout the logistic regressions versus creating one group that combined: the social background, other precollege personal characteristics, external demands as students enter college, and experiences during college, to meet the minimum requirement for logistic regression of having at least 20 cases per predictor, given the limited number of identifiable hybrid or treatment college attendees found who were also were found in the BPS and NELS studies (Leech et al., 2008).

BPS dataset transfer and baccalaureate degree attained overall-social background variables. The first grouping of variables from the BPS dataset was social background variables (first college attended, race, gender, age, parents' higher education level, and parents' socioeconomic status). A total of 430 students in this study attended either a two-year college (control) or a hybrid college (treatment), with a majority (86%) attending the former. A slight majority (53%) were female and over one-third (38%) were first-generation students whose parents had a high school education or less. A majority of the respondents were White (80%) and were between the ages of 16 and 20 years old (85%). These data are similar to national survey results for two-year colleges from 2003-2004 in gender (59% female), but not for race where White students represented less (60%) and the average for the age of those attending two-year schools was higher (53% were 24 and above) than those represented in this study (Horn & Nevill, 2006; Provasnik & Planty, 2008). These differences may relate to the selection of hybrid and two-year colleges found in this study, the small number of students found attending hybrid colleges, or BPS oversampling to make the data representational.

Descriptive statistics relating to counts and means for transfer status and baccalaureate degree attainment overall from first college attended through the 1994 BPS survey for these variables are represented in Table 16 and Table 17 respectively.[12] [13]

[12] Differences between Tables 12 & 13 and 15 & 16 are because the first two charts are referring to the first and second degree earned and the second two charts relate to overall degree earned, rounding differences, and the logistic regressions automatically removed incomplete data across all independent variables.

[13] The table subtitle "Row %" refers to the count percentage of the total row count of the variable category, and the subtitle "Column %" refers to the variable category total column count percentage.

Table 16

BPS Dataset: Descriptive Statistics and Social Background Variables Related to Transfer Status

		Did not transfer				Transferred				Total			
Variable	Category	Count*	Row %	Column %	Mean	Count*	Row %	Column %	Mean	Count*	Row %	Column %	Mean
1st College attended	Control	250	67.6%	83.3%		120	32.4%	92.3%		370	100.0%	86.0%	
	Treatment +	50	83.3%	16.7%		10	16.7%	7.7%		60	100.0%	14.0%	
	Total	300	69.8%	100.0%		130	30.2%	100.0%		430	100.0%	100.0%	
Student's Gender	Male	240	50.0%	46.2%		240	50.0%	49.0%		480	100.0%	47.5%	
	Female +	280	52.8%	53.8%		250	47.2%	51.0%		530	100.0%	52.5%	
	Total	520	51.5%	100.0%		490	48.5%	100.0%		1010	100.0%	100.0%	
Family Income					.03				-.03				.00
Parents' HE Level	High school or less +	160	51.6%	39.0%		150	48.4%	36.6%		310	100.0%	37.8%	
	Some college, bachelor- more	250	49.0%	61.0%		260	51.0%	63.4%		510	100.0%	62.2%	
	Total	410	50.0%	100.0%		410	50.0%	100.0%		820	100.0%	100.0%	
Race	White, not Hispanic +	380	55.1%	82.6%		310	44.9%	77.5%		690	100.0%	80.2%	
	Black, not Hispanic	40	44.4%	8.7%		50	55.6%	12.5%		90	100.0%	10.5%	
	Hispanic or Latino	20	40.0%	4.3%		30	60.0%	7.5%		50	100.0%	5.8%	
	Asian or Pacific Islander	20	66.7%	4.3%		10	33.3%	2.5%		30	100.0%	3.5%	
	Total	460	53.5%	100.0%		400	46.5%	100.0%		860	100.0%	100.0%	
Age Categories	16 to 20 years old +	470	50.0%	81.0%		470	50.0%	90.4%		940	100.0%	85.5%	
	21 years old and higher	110	68.8%	19.0%		50	31.3%	9.6%		160	100.0%	14.5%	
	Total	580	52.7%	100.0%		520	47.3%	100.0%		1100	100.0%	100.0%	

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

+ Indicator or reference group

Table 17

BPS Dataset: Descriptive Statistics and Social Background Variables Related to Baccalaureate Degree Attained Overall

		Obtained bachelor's degree				Did not obtain bachelor's degree				Total			
Variable	Category	Count*	Row %	Column %	Mean	Count*	Row %	Column %	Mean	Count*	Row %	Column %	Mean
1st college attended	Control	40	10.8%	66.7%		330	89.2%	89.2%		370	100.0%	86.0%	
	Treatment +	20	33.3%	33.3%		40	66.7%	10.8%		60	100.0%	14.0%	
	Total	60	14.0%	100.0%		370	86.0%	100.0%		430	100.0%	100.0%	
Student's gender	Male	120	25.0%	44.4%		360	75.0%	48.6%		480	100.0%	47.5%	
	Female +	150	28.3%	55.6%		380	71.7%	51.4%		530	100.0%	52.5%	
	Total	270	26.7%	100.0%		740	73.3%	100.0%		1010	100.0%	100.0%	
Family income					.20				-.06				.00
Parents' HE level	High school or less	60	19.4%	27.3%		250	80.6%	41.7%		310	100.0%	37.8%	
	Some college, bachelor's- more +	160	31.4%	72.7%		350	68.6%	58.3%		510	100.0%	62.2%	
	Total	220	26.8%	100.0%		600	73.2%	100.0%		820	100.0%	100.0%	
Race	White, not Hispanic +	190	27.5%	82.6%		500	72.5%	79.4%		690	100.0%	80.2%	
	Black, not Hispanic	20	22.2%	8.7%		70	77.8%	11.1%		90	100.0%	10.5%	
	Hispanic or Latino	10	20.0%	4.3%		40	80.0%	6.3%		50	100.0%	5.8%	
	Asian or Pacific Islander	10	33.3%	4.3%		20	66.7%	3.2%		30	100.0%	3.5%	
	Total	230	26.7%	100.0%		630	73.3%	100.0%		860	100.0%	100.0%	
Age categories	16 to 20 years old +	270	28.7%	96.4%		670	71.3%	80.7%		940	100.0%	84.7%	
	21 years old and higher	10	5.9%	3.6%		160	94.1%	19.3%		170	100.0%	15.3%	
	Total	280	25.2%	100.0%		830	74.8%	100.0%		1110	100.0%	100.0%	

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.
+ Indicator or reference group

To answer the first and second research questions, I used logistic regression with the BPS dataset to determine if the six predictor variables (First college attended, gender, family income, parents' higher education level, race, and age) in the social background grouping significantly predicted whether students transferred or obtained a baccalaureate degree overall (dependent variables) from first college attended through the 1994 BPS survey. Counts and means for these variables are represented in Table 18.

Table 18

BPS Dataset: Counts and Means-Social Background Variables Related to Transfer Status and Baccalaureate Degree Attained Overall

Variable	*n**	Min	Max	Mean	SD
Transfer status	1,110	0.00	1.00	.4715	.49941
Bachelor's degree	1,110	0.00	1.00	.7548	.43043
1st college attended	550	0.00	1.00	.1633	.36998
Student's gender	1,180	0.00	1.00	.5305	.49928
Family income	1,300	-6.18	1.52	.0000	1.27841
Parents' HE level	950	1.00	2.00	1.6118	.48759
Race	1,000	1.00	4.00	1.2988	.70347
Age categories	1,110	1.00	2.00	1.1493	.35657
Valid N (listwise)	230				

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

The six independent variables were first tested for multicolinearity to determine if they were truly independent from each other. Whereas two groupings of variables (age/family income and age/parents' higher education level), contained much of the same information (see Table 19), none of the four variables was substantially correlated at above .50 and no further action was needed (Leech, 2008, p. 95).

Table 19

BPS Dataset: Correlations—Social Background Variables

Correlations [a]

Variable	Result	1st college attended	Gender	Family income	Parents' HE level	Race	Age categories
1st college attended	Pearson correlation	1	.063	.068	.101	-.022	-.109
	Sig. (2-tailed)		.339	.305	.126	.738	.097
Gender	Pearson correlation	.063	1	-.084	.008	.010	-.048
	Sig. (2-tailed)	.339		.204	.908	.877	.469
Family income	Pearson correlation	.068	-.084	1	.114	-.033	-.233**
	Sig. (2-tailed)	.305	.204		.083	.614	.000
Parents' HE level	Pearson correlation	.101	.008	.114	1	.004	-.205**
	Sig. (2-tailed)	.126	.908	.083		.956	.002
Race	Pearson correlation	-.022	.010	-.033	.004	1	-.039
	Sig. (2-tailed)	.738	.877	.614	.956		.554
Age categories	Pearson correlation	-.109	-.048	-.233**	-.205**	-.039	1
	Sig. (2-tailed)	.097	.469	.000	.002	.554	

**. Correlation is significant at the 0.01 level (2-tailed).

a. Listwise N=230

Transfer status logistic regressions. To answer research question one, and research question two, the logistic regressions for transfer status were run in two blocks. In the first block the variable first college attended-hybrid versus two-year college was entered to establish a baseline. When only this one variable was entered, the model was not statistically significant ($\chi^2 = 0.790$, $df = 1$, $n = 230$, $p > .05$).

In the second block the remaining five covariates were added. When all six predictor variables were considered together, they also did not significantly predict whether or not a student would transfer ($\chi^2 = 7.829$, $df = 8$, $n = 230$, $p > .05$). This means that there was no statistical difference relating to transfer in the first college attended between starting at a hybrid or two-year college when these independent variables are accounted for.

Baccalaureate degree attained overall logistic regressions. The logistic regressions were run for baccalaureate degree attainment in two blocks. In the first block the variable first college attended-hybrid versus two-year college was entered. When only this one variable was entered, the model was statistically significant ($\chi^2 = 12.783$, $df = 1$, $n = 230$, $p < .001$).

In the second block the remaining five covariates were added. When all six predictor variables were considered together, they significantly predicted whether or not a student would obtain a bachelor's degree ($\chi^2 = 19.986$, $df = 8$, $n = 230$, $p < .05$). The combination of the six independent variables was able to correctly predict 86% of the time whether students would obtain a baccalaureate degree. The independent covariate variables were only able to predict those who would not obtain a bachelor's degree 100% of the time. The only independent variable that was significant was first college attended-hybrid college, with an odds ratio [Exp(B)] of 3.989 (95% CI = 1.763-9.023). All of the odds ratios for these variables are represented in Table 20. The second block presents pseudo R^2 estimates of effect sizes, indicating that 8% (Cox & Snell R^2) and 15% (Nagelkerke R^2)[14] or less than typical [15] of the variance in whether students completed a baccalaureate degree could be predicted by the linear combination of the variables in the model. Table 20 below presents the odds ratios, which shows that the odds of obtaining a baccalaureate degree are four times greater when students attend a hybrid as the first college versus a two-year.

[14] For regressions models with a categorical dependent variable, it is not possible to compute a single R^2 statistic so approximations are computed instead using two different formulas (IBM® SPSS® Statistics, 2014).

[15] Results can be statistically significantly different and effect size measures if that difference is less than typical, typical, or more than typical (Keith, 2006). With a larger effect size stronger conclusions can be drawn about the overall population (Sprinthall, 2003).

Table 20

BPS Dataset: Logistic Regression—Social Background Variables and Baccalaureate Degree Attained Overall

Variable	B	S.E.	Wald	df	p	Exp(B)
1st college attended—treatment	1.383	.417	11.033	1	.001	3.989**
Student's gender—female	.279	.397	.494	1	.482	1.322
Family income—log10	-.006	.195	.001	1	.975	.994
Parents' HE level—college	.330	.415	.632	1	.427	1.391
Race—White			.292	3	.962	
—Black, not Hispanic	-.371	.704	.278	1	.598	1.449
—Hispanic or Latino	-.128	.815	.025	1	.875	1.136
—Asian or Pacific Islander	-19.449	28420.722	.000	1	.999	.000
Age categories—16–21	19.191	8596.463	.000	1	.998	215974287.4
Constant	-21.553	8596.462	.000	1	.998	.000

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

BPS dataset transfer and baccalaureate degree attained overall-other precollege personal characteristics variables. The second grouping of independent variables, called other precollege personal characteristics (first college attended, high school degree or equivalent, remedial math, remedial reading, remedial study skills, remedial writing, education expectations of a bachelor's degree or higher, and above average academic ability as compared to others) presented an additional set of variables from the BPS dataset in an attempt to answer the third research question. Within these data it appeared that there were distinct differences between those who transferred and those who did not, and those who obtained a bachelor's degree and those who did not, among a few variables. For the transfer status, those who attended a treatment transferred less than those who attended a control college (8% vs. 92%). Those who did not have the expectation of obtaining a baccalaureate degree transferred less than those who did (10% vs. 90%). Counts for these variables and the other precollege personal characteristics are represented in Table 21.

Whereas a majority of the respondents (93%) who did not obtain a baccalaureate degree had a high school diploma, all (100%) of those who obtained a bachelor's degree had a high school diploma. Expectations of obtaining at least a bachelor's degree was a second variable that appeared to result in differences in the outcome variable of bachelor's degree attained. Overall a majority (83%) of the respondents had expected to receive at least a baccalaureate upon entering college. Among those who obtained a bachelor's degree all (100%) had had that expectation; and 78% of those who did not obtain a bachelor's degree had expected to obtain one. The final variable that appears to indicate differences between those who obtained a baccalaureate and those who did not was the variable of above average academic ability as compared to others. Of those who obtained a bachelor's degree almost half (48%) rated themselves as above average as compared with only about a quarter (28%) of those who did not obtain a bachelor's degree. These data are comparable to national survey results that presented two-year college students taking remedial courses at similar levels (math - 15%, reading - 10%, and writing - 10%) (Provasnik & Planty, 2008). Additionally, data presented here is consistent with literature presented showing that students who begin at two-year colleges with aspirations of obtaining a baccalaureate degree are less likely to obtain that degree and obtain it in the same amount of time as students who attend four-year colleges (Alfonso, 2006; Lorenzo, 2005; Pascarella, 1997; U.S. Department of Education, 2001b). Counts for these variables and the other precollege personal characteristics are represented in Table 22.

Table 21

BPS Dataset: Descriptive Statistics and Other Precollege Personal Characteristics Variables Related to Transfer Status

Variable	Category	Did not transfer			Transferred			Total		
		Count*	Row %	Column %	Count*	Row %	Column %	Count*	Row %	Column %
1st college attended	Control	250	67.6%	83.3%	120	32.4%	92.3%	370	100.0%	86.0%
	Treatment +	50	83.3%	16.7%	10	16.7%	7.7%	60	100.0%	14.0%
	Total	300	69.8%	100.0%	130	30.2%	100.0%	430	100.0%	100.0%
High school degree or equivalent	HS diploma +	460	53.5%	93.9%	400	46.5%	95.2%	860	100.0%	94.5%
	Did not receive HS Diploma	30	60.0%	6.1%	20	40.0%	4.8%	50	100.0%	5.5%
	Total	490	53.8%	100.0%	420	46.2%	100.0%	910	100.0%	100.0%
Remedial math Y/N	No +	520	52.5%	91.2%	470	47.5%	92.2%	990	100.0%	91.7%
	Yes	50	55.6%	8.8%	40	44.4%	7.8%	90	100.0%	8.3%
	Total	570	52.8%	100.0%	510	47.2%	100.0%	1,080	100.0%	100.0%
Remedial reading Y/N	No +	520	52.5%	91.2%	470	47.5%	92.2%	990	100.0%	91.7%
	Yes	50	55.6%	8.8%	40	44.4%	7.8%	90	100.0%	8.3%
	Total	570	52.8%	100.0%	510	47.2%	100.0%	1,080	100.0%	100.0%
Remedial study skills Y/N	No +	540	52.4%	93.1%	490	47.6%	94.2%	1,030	100.0%	93.6%
	Yes	40	57.1%	6.9%	30	42.9%	5.8%	70	100.0%	6.4%
	Total	580	52.8%	100.0%	520	47.3%	100.0%	1,100	100.0%	100.0%
Remedial writing Y/N	No +	530	52.5%	91.4%	480	47.5%	94.1%	1,010	100.0%	92.7%
	Yes	50	62.5%	8.6%	30	37.5%	5.9%	80	100.0%	7.3%
	Total	580	53.2%	100.0%	510	46.8%	100.0%	1,090	100.0%	100.0%
Education expectation of bachelor's degree or higher	No	130	72.2%	22.8%	50	27.8%	9.8%	180	100.0%	16.7%
	Yes +	440	48.9%	77.2%	460	51.1%	90.2%	900	100.0%	83.3%
	Total	570	52.8%	100.0%	510	47.2%	100.0%	1,080	100.0%	100.0%
Above average academic ability compared to others	Yes +	210	58.3%	36.2%	150	41.7%	29.4%	360	100.0%	33.0%
	No	370	50.7%	63.8%	360	49.3%	70.6%	730	100.0%	67.0%
	Total	580	53.2%	100.0%	510	46.8%	100.0%	1,090	100.0%	100.0%

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10. + indicator or reference group.

Table 22

BPS Dataset: Descriptive Statistics and Other Precollege Personal Characteristics Variables Related to Baccalaureate Degree Attained Overall

		Obtained bachelor's degree			Did not obtain bachelor's degree			Total		
Variable	Category	Count*	Row %	Column %	Count*	Row %	Column %	Count*	Row %	Column %
1st college attended control or treatment student	Control	40	10.8%	66.7%	330	89.2%	89.2%	370	100.0%	86.0%
	Treatment +	20	33.3%	33.3%	40	66.7%	10.8%	60	100.0%	14.0%
	Total	60	14.0%	100.0%	370	86.0%	100.0%	430	100.0%	100.0%
High school degree or equivalent	HS Diploma +	220	25.6%	100.0%	640	74.4%	92.8%	860	100.0%	94.5%
	Did not receive HS Diploma	0	0.0%	0.0%	50	100.0%	7.2%	50	100.0%	5.5%
	Total	220	24.2%	100.0%	690	75.8%	100.0%	910	100.0%	100.0%
Remedial math Y/N	No +	250	25.3%	92.6%	740	74.7%	90.2%	990	100.0%	90.8%
	Yes	20	20.0%	7.4%	80	80.0%	9.8%	100	100.0%	9.2%
	Total	270	24.8%	100.0%	820	75.2%	100.0%	1,090	100.0%	100.0%
Remedial reading Y/N	No +	250	25.3%	92.6%	740	74.7%	90.2%	990	100.0%	90.8%
	Yes	20	20.0%	7.4%	80	80.0%	9.8%	100	100.0%	9.2%
	Total	270	24.8%	100.0%	820	75.2%	100.0%	1,090	100.0%	100.0%
Remedial study skills Y/N	No +	250	24.3%	92.6%	780	75.7%	95.1%	1,030	100.0%	94.5%
	Yes	20	33.3%	7.4%	40	66.7%	4.9%	60	100.0%	5.5%
	Total	270	24.8%	100.0%	820	75.2%	100.0%	1,090	100.0%	100.0%
Remedial writing Y/N	No +	250	24.8%	92.6%	760	75.2%	92.7%	1,010	100.0%	92.7%
	Yes	20	25.0%	7.4%	60	75.0%	7.3%	80	100.0%	7.3%
	Total	270	24.8%	100.0%	820	75.2%	100.0%	1,090	100.0%	100.0%
Expectation of bachelor's degree or higher	No	0	0.0%	.0%	180	100.0%	22.2%	180	100.0%	16.7%
	Yes +	270	30.0%	100.0%	630	70.0%	77.8%	900	100.0%	83.3%
	Total	270	25.0%	100.0%	810	75.0%	100.0%	1,080	100.0%	100.0%
Above average academic ability compared to others	Yes +	130	36.1%	48.1%	230	63.9%	28.0%	360	100.0%	33.0%
	No	140	19.2%	51.9%	590	80.8%	72.0%	730	100.0%	67.0%
	Total	270	24.8%	100.0%	820	75.2%	100.0%	1,090	100.0%	100.0%

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10. + indicator or reference group.

To answer the first and third research questions, I used logistic regression with the BPS dataset to determine if the eight independent variables significantly predicted whether students would transfer and obtain a bachelor's degree (dependent variables). Counts and means for these variables are represented in Table 23.

Table 23

BPS Dataset: Counts and Means—Other Precollege Personal Characteristics Variables Related to Transfer Status and Baccalaureate Degree Attained Overall

Variable	*n**	Min	Max	Mean	SD
Transfer status	1,110	0.00	1.00	.4715	.49941
Bachelor's degree	1,110	0.00	1.00	.7548	.43043
1st college attended	550	0.00	1.00	.1633	.36998
High school degree or equivalent	1,070	0.00	1.00	.0506	.21920
Remedial math Y/N	1,280	0.00	1.00	.0861	.28058
Remedial reading Y/N	1,280	0.00	1.00	.0864	.28108
Remedial study skills Y/N	1,280	0.00	1.00	.0555	.22907
Remedial writing Y/N	1,280	0.00	1.00	.0682	.25216
Expectation of bachelor's degree or higher	1,270	0.00	1.00	.8289	.37678
Above average academic ability compared to others	1,280	0.00	1.00	.6758	.46827
Valid N (listwise)	350				

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

The eight independent variables were first tested for multicolinearity to determine if they were truly independent from each other. Whereas 10 groupings of variables significantly contained much of the same information (see Table 24), only the two groupings of remedial reading/remedial math and remedial writing/remedial reading were substantially correlated at above .50 (Leech, 2008, p. 95). Because the two models (two blocks) for the other precollege personal characteristics variables for both transfer and baccalaureate attainment ended up

remaining significant with all the variables included, I decided that no further action was needed in relation to multicolinearity.

Table 24

BPS Dataset: Correlations and Other Precollege Personal Characteristics Variables Related to Transfer Status and Baccalaureate Degree Attained Overall

Correlations [a]

Variable	Result	1st college attended	High school degree or equivalent	Remedial math Y/N	Remedial reading Y/N	Remedial study Skills Y/N	Remedial writing Y/N	Expectation of bachelor's degree or higher	Above average academic ability compared to others
1st college attended	Pearson correlation	1	-.083	-.049	.006	.030	-.029	.137**	-.085
	Sig. (2-tailed)		.087	.309	.903	.534	.550	.004	.079
High school degree or equivalent	Pearson correlation	-.083	1	.034	.017	-.022	-.021	-.073	.016
	Sig. (2-tailed)	.087		.483	.730	.647	.665	.131	.743
Remedial math Y/N	Pearson correlation	-.049	.034	1	.527**	.326**	.451**	.009	.105*
	Sig. (2-tailed)	.309	.483		.000	.000	.000	.851	.029
Remedial reading Y/N	Pearson correlation	.006	.017	.527**	1	.382**	.610**	.022	.150**
	Sig. (2-tailed)	.903	.730	.000		.000	.000	.648	.002
Remedial study skills Y/N	Pearson correlation	.030	-.022	.326**	.382**	1	.262**	.013	.034
	Sig. (2-tailed)	.534	.647	.000	.000		.000	.791	.488
Remedial writing Y/N	Pearson correlation	-.029	-.021	.451**	.610**	.262**	1	.010	.092
	Sig. (2-tailed)	.550	.665	.000	.000	.000		.832	.055
Expectation of bachelor's degree or higher	Pearson correlation	.137**	-.073	.009	.022	.013	.010	1	-.114*
	Sig. (2-tailed)	.004	.131	.851	.648	.791	.832		.018
Above average academic ability compared to others	Pearson correlation	-.085	.016	.105*	.150**	.034	.092	-.114*	1
	Sig. (2-tailed)	.079	.743	.029	.002	.488	.055	.018	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

a. Listwise N=430

Transfer status logistic regressions. The logistic regressions were run for transfer status in two blocks. In the first block the variable first college attended-hybrid versus two-year college was entered. When only this one variable was entered, the model was statistically significant *(*χ^2= 9.173, *df* = 1, *n* = 350, *p* < .01).

In the second block the remaining seven covariates were added. When all eight predictor variables were considered together, they significantly predicted whether or not a student would transfer, *(*χ^2= 26.626, *df* = 8, *n* = 350, *p* < .01). The combination of the eight independent variables was able to correctly predict 70% of the time whether students would transfer. The independent covariate variables were better able to predict those who did not transfer (100%) than those who did transfer (0.0%). Only two variables in the model were significant, and they were first college attended-hybrid college, with an odds ratio [Exp(B)] of .239 (95% CI = .090-.635) and educational expectation of a bachelor's degree or higher, with an odds ratio [Exp(B)] of 3.008 (95% CI = 1.627-2.499). These results indicated that transferring decreased by .24 times for those who attended a hybrid college versus a two-year college, and the odds of transferring improved by 3.0 times for those who had an expectation of obtaining a bachelor's degree or higher. The second block derived pseudo R^2 estimates of effect sizes, indicating that 7% (Cox & Snell R^2) and 11% (Nagelkerke R^2) of the variance in whether students would transfer could be predicted by the linear combination of the variables in the model. Table 25 below presents the odds ratios, which provides evidence that the odds of transferring are less when students attend a hybrid college and they are more when students have an expectation of obtaining a bachelor's degree or higher, both being consistent with literature (Alfonso, 2006; Lorenzo, 2005; Pascarella, 1997; U.S. Department of Education, 2001b).

Table 25

BPS Dataset: Logistic Regression—Other Precollege Personal Characteristics Variables Related to Transfer Status

Variable	B	S.E.	Wald	df	p	Exp(B)
1st college attended—treatment	-1.432	.499	8.224	1	.004	.239**
High school degree or equivalent	-.275	.481	.328	1	.567	.759
Remedial math—no	.063	.470	.018	1	.894	1.065
Remedial reading—no	.239	.610	.154	1	.695	1.270
Remedial study skills—no	1.245	.812	2.352	1	.125	3.472
Remedial writing—no	-.305	.623	.240	1	.624	.737
Education expectation of BA degree	1.101	.314	12.326	1	.000	3.008***
Above average academic ability	-.242	.273	.791	1	.374	.785
Constant	-2.426	.960	6.388	1	.011	.088

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

Baccalaureate degree attained overall logistic regressions. The logistic regressions for baccalaureate degree attained overall were run in two blocks. In the first block the variable first college attended-hybrid versus two-year college was entered. When only this one variable was entered, the model was statistically significant ($\chi^2 = 16.965$, $df = 1$, $n = 350$, $p < .001$).

In the second block the remaining seven covariates were added. When all eight predictor variables were considered together, they significantly predicted whether or not a student would obtain a bachelor's degree, ($\chi^2 = 63.216$, $df = 8$, $n = 350$, $p < .001$). The combination of the eight independent variables was able to correctly predict 86% of the time whether students would obtain a baccalaureate degree. The independent covariate variables were better able to predict those who would not obtain a bachelor's degree (98%) than those who would obtain a bachelor's degree (16%). Only two variables in the model were significant, and they were first college attended-hybrid college, with an odds ratio [Exp(B)] of 3.446 (95% CI = 1.589-7.472) and above average academic ability compared to others, with an odds ratio [Exp(B)] of 2.675 (95% CI = 1.360-5.264). These results indicated that the odds of obtaining a bachelor's degree improved by

3.4 times for those who attended a hybrid college versus a two-year college, and the odds of obtaining a bachelor's degree improved by 2.7 times for those who believed they had above average academic ability as compared to others. The second block presents pseudo R^2 estimates of effect sizes, indicating that 17% (Cox & Snell R^2) and 30% (Nagelkerke R^2) of the variance in whether students completed a baccalaureate degree could be predicted by the linear combination of the variables in the model. The results on having had above average academic ability as compared to others is consistent with literature in that those who start college with academic self-assurance do significantly better than those with less academic confidence (Chemers et al., 2001). Table 26 below presents the odds ratios, which indicated that the odds of obtaining a baccalaureate degree are greater when students attend a hybrid college and think they had above average academic ability compared to others.

Table 26

BPS Dataset: Logistic Regression—Other Precollege Personal Characteristics Variables Related to Baccalaureate Degree Attained Overall

Variable	B	S.E.	Wald	df	p	Exp(B)
1st college attended—treatment	1.237	.395	9.819	1	.002	3.446**
High school degree or equivalent	19.094	7762.453	.000	1	.998	196003782.445
Remedial math—no	1.207	.888	1.846	1	.174	3.344
Remedial reading—no	-.496	.942	.278	1	.598	.609
Remedial study skills—no	1.193	1.164	1.050	1	.305	3.297
Remedial writing—no	.039	1.077	.001	1	.971	1.040
Education expectation of BA degree	19.513	4012.532	.000	1	.996	297989056.8
Above average academic ability	.984	.345	8.119	1	.004	2.675**
Constant	-42.468	8738.196	.000	1	.996	.000

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

BPS dataset transfer and baccalaureate degree attained overall-external demands as students enter college variables. The third grouping of independent variables presented a glimpse of some of the external demands these students faced as they began their college

experience as reflected in the BPS dataset. These descriptive results indicated a difference between those who transferred and obtained a bachelor's degree and those who did not, within five variables. These include the first college attended, married/separated, children, single parent, and work categories. Students who attended treatment colleges transferred less than those who attended control colleges (17% vs. 32%) but obtained bachelor's degrees at a higher percentage (33% vs. 11%). Whereas students who were not married transferred 51% of the time, married/separated students only transferred 33% of the time. One hundred percent (100%) of those who received a baccalaureate degree were not married, did not have children, and were not single parents. For those who did not obtain a bachelor's degree 10% were married or separated, 15% had children, and 6% were single parents. These data found in this study represent lower percentages than national data from two-year students for married/separated (16%), and single parents (25%) (Horn & Nevill, 2006). Counts for these particular variables and the other external demands as students entered college are represented in Table 27 and Table 28.

Table 27

BPS Dataset: Descriptive Statistics and External Demands as Students Enter College Variables Related to Transfer Status

		Did not transfer			Transferred			Total		
Variable	Category	Count*	Row %	Column %	Count*	Row %	Column %	Count*	Row %	Column %
1st college attended	Control	250	67.6%	83.3%	120	32.4%	92.3%	370	100.0%	86.0%
	Treatment +	50	83.3%	16.7%	10	16.7%	7.7%	60	100.0%	14.0%
	Total	300	69.8%	100.0%	130	30.2%	100.0%	430	100.0%	100.0%
Marital status	Not married +	370	49.3%	90.2%	380	50.7%	95.0%	750	100.0%	92.6%
	Married, separated	40	66.7%	9.8%	20	33.3%	5.0%	60	100.0%	7.4%
	Total	410	50.6%	100.0%	400	49.4%	100.0%	810	100.0%	100.0%
Children	No +	500	51.5%	86.2%	470	48.5%	92.2%	970	100.0%	89.0%
	Yes	80	66.7%	13.8%	40	33.3%	7.8%	120	100.0%	11.0%
	Total	580	53.2%	100.0%	510	46.8%	100.0%	1090	100.0%	100.0%
Single parent	Not a single parent	540	53.5%	94.7%	470	46.5%	95.9%	1010	100.0%	95.3%
	Single parent +	30	60.0%	5.3%	20	40.0%	4.1%	50	100.0%	4.7%
	Total	570	53.8%	100.0%	490	46.2%	100.0%	1060	100.0%	100.0%
Work categories	Worked 1 to 20 hours +	300	53.6%	51.7%	260	46.4%	50.0%	560	100.0%	50.9%
	Worked 21 to 39 hours	230	52.3%	39.7%	210	47.7%	40.4%	440	100.0%	40.0%
	Worked more than 40 hours	50	50.0%	8.6%	50	50.0%	9.6%	100	100.0%	9.1%
	Total	580	52.7%	100.0%	520	47.3%	100.0%	1100	100.0%	100.0%

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

+ Indicator or reference group.

Table 28

BPS Dataset: Descriptive Statistics and External Demands as Students Enter College Variables Related to Baccalaureate Degree Attained Overall

		Obtained bachelor's degree			Did not obtain bachelor's degree			Total		
Variable	Category	Count*	Row %	Column %	Count*	Row %	Column %	Count*	Row %	Column %
1st college attended	Control	40	10.8%	66.7%	330	89.2%	89.2%	370	100.0%	86.0%
	Treatment +	20	33.3%	33.3%	40	66.7%	10.8%	60	100.0%	14.0%
	Total	60	14.0%	100.0%	370	86.0%	100.0%	430	100.0%	100.0%
Marital status	Not married +	220	29.7%	100.0%	520	70.3%	89.7%	740	100.0%	92.5%
	Married, separated	0	0.0%	.0%	60	100.0%	10.3%	60	100.0%	7.5%
	Total	220	27.5%	100.0%	580	72.5%	100.0%	800	100.0%	100.0%
Children	No +	270	27.8%	100.0%	700	72.2%	85.4%	970	100.0%	89.0%
	Yes	0	0.0%	0.0%	120	100.0%	14.6%	120	100.0%	11.0%
	Total	270	24.8%	100.0%	820	75.2%	100.0%	1,090	100.0%	100.0%
Single parent	Not a single parent	270	26.7%	100.0%	740	73.3%	93.7%	1,010	100.0%	95.3%
	Single parent +	0	0.0%	.0%	50	100.0%	6.3%	50	100.0%	4.7%
	Total	270	25.5%	100.0%	790	74.5%	100.0%	1,060	100.0%	100.0%
Work categories	Worked 1 to 20 hours +	150	27.3%	55.6%	400	72.7%	48.2%	550	100.0%	50.0%
	Worked 21 to 39 hours	100	22.2%	37.0%	350	77.8%	42.2%	450	100.0%	40.9%
	Worked more than 40 hours	20	20.0%	7.4%	80	80.0%	9.6%	100	100.0%	9.1%
	Total	270	24.5%	100.0%	830	75.5%	100.0%	1,100	100.0%	100.0%

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.
+ Indicator or reference group.

To determine if the external demands as students enter college variables affected the outcome of transfer and baccalaureate attainment (research question 4), I used logistic regression with the BPS dataset to determine if the five independent variables significantly predicted whether students would transfer or obtain a bachelor's degree (dependent variables). Counts and means for these variables are represented in Table 29.

Table 29

BPS Dataset: Counts and Means—External Demands as Students Enter College Variables Related to Transfer Status and Baccalaureate Degree Attained Overall

Variable	*n**	Min	Max	Mean	SD
Transfer status	1,110	0.00	1.00	.4715	.49941
Bachelor's degree	1,110	0.00	1.00	.7548	.43043
1st college attended	550	0.00	1.00	.1633	.36998
Marital status	930	0.00	1.00	.0786	.26923
Children Y/N	1,090	0.00	1.00	.1113	.31467
Single parent	1,060	0.00	1.00	.0500	.21000
Work categories	1,300	1.00	3.00	1.5937	.65023
Valid N (listwise)	250				

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

The five independent variables were first tested for multicolinearity to determine if they were truly independent from each other. Two groupings of variables (children/marital status and children/single parent) significantly contained the same information (see Table 30) and were substantially correlated at above .50 as one might expect (Leech, 2008, p. 95).

Table 30

BPS Dataset: Correlations—External Demands as Students Enter College Variables Related to Transfer Status and Baccalaureate Degree Attained Overall

Correlations [a]

Variable	Result	1st college attended	Marital status	Children yes or no	Single parent	Work categories
1st college attended	Pearson correlation	1	-.096	-.123	-.058	.023
	Sig. (2-tailed)		.136	.054	.367	.722
Marital status	Pearson correlation	-.096	1	.681**	.002	-.010
	Sig. (2-tailed)	.136		.000	.974	.875
Children	Pearson correlation	-.123	.681**	1	.554**	-.048
	Sig. (2-tailed)	.054	.000		.000	.457
Single parent	Pearson correlation	-.058	.002	.554**	1	-.122
	Sig. (2-tailed)	.367	.974	.000		.057
Work categories	Pearson correlation	.023	-.010	-.048	-.122	1
	Sig. (2-tailed)	.722	.875	.457	.057	

**. Correlation is significant at the 0.01 level (2-tailed).

a. Listwise N=245

The independent variable children was then removed from the model as it contained much of the same information as the married and single parent independent variables. These data are represented in Table 31.

Table 31

BPS Dataset: Correlations—External Demands as Students Enter College Variables Related to Transfer Status and Baccalaureate Degree Attained Overall-Children Removed

Correlations [a]

Variable	Result	1st college attended	Marital status	Single parent	Work categories
1st college attended	Pearson correlation	1	-.104	-.057	.016
	Sig. (2-tailed)		.103	.375	.797
Marital status	Pearson correlation	-.104	1	.003	-.019
	Sig. (2-tailed)	.103		.960	.772
Single parent	Pearson correlation	-.057	-.003	1	-.123
	Sig. (2-tailed)	.375	.960		.053
Work categories	Pearson correlation	.016	.019	-.123	1
	Sig. (2-tailed)	.797	.772	.053	

**. Correlation is significant at the 0.01 level (2-tailed).
a. Listwise N=245

Transfer status logistic regressions. The logistic regressions were run for transfer status in two blocks with the independent variable children included. In the first block the variable first college attended-hybrid versus two-year college was entered. When only this one variable was entered, the model was statistically significant (χ^2= 4.984, *df* = 1, *n* = 250, *p* < .05).

In the second block the remaining five covariates were added. When all six predictor variables were considered together, they did not significantly predict whether or not a student would transfer, (χ^2= 8.688, *df* = 6, *n* = 250, *p* > .05). One variable, first college attended hybrid or two-year college attendance, remained significant with an odds ratio [Exp(B)] of .437 (95% CI = .211-.909). These results indicated that the odds of transferring decreased by .4 times for those who attended a hybrid college versus a two-year college. The differences between these test results and the chi-squared previously run (Table 11) on transfer status appeared to be related to

the smaller sample size for the logistic regression (250 vs. 430) and possibly due to controlling for the independent variables for the external demands as students enter college variables. The result differences between the chi-squared and the logistic regression should be taken with caution, but may indicate further investigation is warranted. See Table 32.

Table 32

BPS Dataset: Logistic Regression—External Demands as Students Enter College Variables Related to Transfer Status

Variable	B	S.E.	Wald	df	p	Exp(B)
1st college attended—treatment	-.827	.373	4.907	1	.027	.437*
Married—no	.678	.788	.741	1	.389	1.971
Children—no	-.334	.812	.170	1	.680	.716
Single parent—yes	-1.083	.992	1.192	1	.275	.338
Worked 1–20 hours			1.047	2	.592	
Worked 21–39 hours	-.078	.297	.068	1	.794	.925
Worked more than 40	-.568	.552	1.046	1	.306	.569
Constant	-.793	.455	3.034	1	.082	.452

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

The logistic regression was run again after removing the variable children, which was highly correlated with the independent variables married and single parent. The significance of the logistic regression results was unchanged. In the first block the variable first college attended-hybrid versus two-year college was entered. When only this one variable was entered, the model was statistically significant ($\chi^2 = 4.779$, $df = 1$, $n = 250$, $p < .05$).

In the second block the remaining four covariates were added. When all five predictor variables were considered together, they did not significantly predict whether or not a student would transfer, ($\chi^2 = 8.962$, $df = 5$, $n = 250$, $p > .05$). As before, only one variable, first college

attended hybrid or two-year college attendance, remained significant with an odds ratio [Exp(B)] of .436 (95% CI = .210-.906).

Baccalaureate degree attained overall logistic regressions. Logistic regressions were run in two blocks. In the first block the variable first college attended-hybrid versus two-year college was entered. When only this one variable was entered, the model was statistically significant (χ^2 = 15.529, df = 1, n = 250, p < .001).

In the second block the remaining five covariates were added. Because there were no changes in the transfer logistic regressions with the variable children removed, I decided to leave it in for the baccalaureate regressions. When all six predictor variables were considered together, they significantly predicted whether or not a student would obtain a bachelor's degree (χ^2 = 28.198, df = 6, n = 250, p < .001). The combination of the five independent variables was able to correctly predict 83% of the time whether students would obtain a baccalaureate degree. The independent covariate variables were only able to predict (100%) those who would not obtain a bachelor's degree. The only variable that was significant was first college attended-hybrid college, with an odds ratio [Exp(B)] of 3.869 (95% CI = 1.870-8.002). These results indicate that the odds of obtaining a bachelor's degree improve by 3.9 for those who attend a hybrid college versus a two-year college. The second block presents pseudo R^2 estimates of effect sizes, indicating that 11% (Cox & Snell R^2) and 18% (Nagelkerke R^2) of the variance in whether students complete a baccalaureate degree could be predicted by the linear combination of the variables in the model. Table 33 presents the odds ratios, which demonstrate that the odds of obtaining a baccalaureate degree are greater when students attend a hybrid college.

Table 33

BPS Dataset: Logistic Regression—External Demands as Students Enter College Variables Related to Baccalaureate Degree Attained Overall

Variable	B	S.E.	Wald	df	p	Exp(B)
1st college attended—treatment	1.353	.371	13.313	1	.000	3.869***
Married—no	1.571	1.467	1.147	1	.284	4.810
Children—no	.552	1.473	.140	1	.708	1.736
Single parent—yes	-19.115	10061.325	.000	1	.998	.000
Worked 1–20 hours			1.762	2	.414	
Worked 21–39 hours	-.515	.388	1.761	1	.185	.598
Worked more than 40	-.229	.642	.127	1	.722	.796
Constant	-3.685	1.126	10.722	1	.001	.025**

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

BPS dataset transfer and baccalaureate degree attained overall-experiences during college variables. The final independent grouping of variables provided a picture of some of the academic interests, collegiate performance, and academic/social engagement from the BPS dataset. A total of 430 students attended a control or two-year college or a treatment or hybrid college, with the majority (86%) attending the former. It appears that large variances exist for those who transferred compared to those who did not for treatment students (8% vs. 17%), their major being vocational (10% vs. 23%), and with GPAs of A's and B's (20% vs. 33%). In relation to the outcome variable obtained bachelor's degrees, each dichotomous independent variable had a higher percentage obtained[16]. Of the students who obtained a bachelor's degree,

[16] First college treatment, attendance full-time, major was academic, GPA's A & B, Met with advisor, talked with faculty, attended career related lectures, in study groups, contact with faculty outside class, participated in school clubs, went places with friends, in student assistance centers, and participated in intramural activities.

the greatest disparity was between those who attended full-time (96%) and those who were part-time (4%). Counts for these particular variables are represented in Tables 34 and 35.

Table 34

BPS Dataset: Descriptive Statistics and Experiences During College Variables Related to Transfer Status

Variable	Category	Did not transfer			Transferred			Total		
		Count*	Row %	Column %	Count*	Row %	Column %	Count*	Row %	Column %
1st college attended	Control	250	67.6%	83.3%	120	32.4%	92.3%	370	100.0%	86.0%
	Treatment +	50	83.3%	16.7%	10	16.7%	7.7%	60	100.0%	14.0%
	Total	300	69.8%	100.0%	130	30.2%	100.0%	430	100.0%	100.0%
Students' attendance status	Full-time	400	51.3%	76.9%	380	48.7%	79.2%	780	100.0%	78.0%
	< Full-time +	120	54.5%	23.1%	100	45.5%	20.8%	220	100.0%	22.0%
	Total	520	52.0%	100.0%	480	48.0%	100.0%	1,000	100.0%	100.0%
Major was vocational or academic	Vocational +	120	75.0%	22.6%	40	25.0%	10.0%	160	100.0%	17.2%
	Academic	410	53.2%	77.4%	360	46.8%	90.0%	770	100.0%	82.8%
	Total	530	57.0%	100.0%	400	43.0%	100.0%	930	100.0%	100.0%
GPA A's and B's	A's & B's +	150	65.2%	33.3%	80	34.8%	20.0%	230	100.0%	27.1%
	C's D's &F's	300	48.4%	66.7%	320	51.6%	80.0%	620	100.0%	72.9%
	Total	450	52.9%	100.0%	400	47.1%	100.0%	850	100.0%	100.0%
Met advisor concerning academic plans	No	110	57.9%	19.0%	80	42.1%	15.7%	190	100.0%	17.4%
	Yes +	470	52.2%	81.0%	430	47.8%	84.3%	900	100.0%	82.6%
	Total	580	53.2%	100.0%	510	46.8%	100.0%	1,090	100.0%	100.0%
Talked with faculty about academic	No	110	52.4%	19.3%	100	47.6%	19.6%	210	100.0%	19.4%
matters	Yes +	460	52.9%	80.7%	410	47.1%	80.4%	870	100.0%	80.6%
	Total	570	52.8%	100.0%	510	47.2%	100.0%	1,080	100.0%	100.0%
Attended career-related lectures	No	260	54.2%	45.6%	220	45.8%	42.3%	480	100.0%	44.0%
	Yes +	310	50.8%	54.4%	300	49.2%	57.7%	610	100.0%	56.0%
	Total	570	52.3%	100.0%	520	47.7%	100.0%	1,090	100.0%	100.0%
In study groups with other students	No	190	52.8%	33.3%	170	47.2%	33.3%	360	100.0%	33.3%
	Yes +	380	52.8%	66.7%	340	47.2%	66.7%	720	100.0%	66.7%
	Total	570	52.8%	100.0%	510	47.2%	100.0%	1,080	100.0%	100.0%

		Did not transfer			Transferred			Total		
Variable	Category	Count*	Row %	Column %	Count*	Row %	Column %	Count*	Row %	Column %
Contact with faculty outside class	No	250	53.2%	43.1%	220	46.8%	43.1%	470	100.0%	43.1%
	Yes +	330	53.2%	56.9%	290	46.8%	56.9%	620	100.0%	56.9%
	Total	580	53.2%	100.0%	510	46.8%	100.0%	1,090	100.0%	100.0%
Participated in school clubs	No	360	51.4%	62.1%	340	48.6%	65.4%	700	100.0%	63.6%
	Yes +	220	55.0%	37.9%	180	45.0%	34.6%	400	100.0%	36.4%
	Total	580	52.7%	100.0%	520	47.3%	100.0%	1,100	100.0%	100.0%
Went places with friends from school	No	110	55.0%	19.3%	90	45.0%	17.3%	200	100.0%	18.3%
	Yes +	460	51.7%	80.7%	430	48.3%	82.7%	890	100.0%	81.7%
	Total	570	52.3%	100.0%	520	47.7%	100.0%	1,090	100.0%	100.0%
In student assist. centers/programs	No	400	51.9%	69.0%	370	48.1%	71.2%	770	100.0%	70.0%
	Yes +	180	54.5%	31.0%	150	45.5%	28.8%	330	100.0%	30.0%
	Total	580	52.7%	100.0%	520	47.3%	100.0%	1,100	100.0%	100.0%
Participated intramural activities	No	310	55.4%	54.4%	250	44.6%	48.1%	560	100.0%	51.4%
	Yes +	260	49.1%	45.6%	270	50.9%	51.9%	530	100.0%	48.6%
	Total	570	52.3%	100.0%	520	47.7%	100.0%	1,090	100.0%	100.0%

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10. + Indicator or reference group.

Table 35

BPS Dataset: Descriptive Statistics and Experiences During College Variables Related to Baccalaureate Degree Attained Overall

		Obtained bachelor's degree			Did not obtain bachelor's degree			Total		
Variable	Category	Count*	Row %	Column %	Count*	Row %	Column %	Count*	Row %	Column %
1st college attended	Control	40	10.8%	66.7%	330	89.2%	89.2%	370	100.0%	86.0%
	Treatment +	20	33.3%	33.3%	40	66.7%	10.8%	60	100.0%	14.0%
	Total	60	14.0%	100.0%	370	86.0%	100.0%	430	100.0%	100.0%
Students attendance status	Full-time +	250	32.1%	96.2%	530	67.9%	71.6%	780	100.0%	78.0%
	< Full-time	10	4.5%	3.8%	210	95.5%	28.4%	220	100.0%	22.0%
	Total	260	26.0%	100.0%	740	74.0%	100.0%	1,000	100.0%	100.0%
Major was vocational or academic	Vocational +	10	5.9%	3.7%	160	94.1%	23.5%	170	100.0%	17.9%
	Academic	260	33.3%	96.3%	520	66.7%	76.5%	780	100.0%	82.1%
	Total	270	28.4%	100.0%	680	71.6%	100.0%	950	100.0%	100.0%
GPA A's and B's	A's & B's +	80	36.4%	34.8%	140	63.6%	23.0%	220	100.0%	26.2%
	C's D's &F's	150	24.2%	65.2%	470	75.8%	77.0%	620	100.0%	73.8%
	Total	230	27.4%	100.0%	610	72.6%	100.0%	840	100.0%	100.0%
Met advisor concerning academic plans	No	30	15.8%	11.1%	160	84.2%	19.5%	190	100.0%	17.4%
	Yes +	240	26.7%	88.9%	660	73.3%	80.5%	900	100.0%	82.6%
	Total	270	24.8%	100.0%	820	75.2%	100.0%	1,090	100.0%	100.0%
Talked with faculty about academic matters	No	30	13.6%	11.1%	190	86.4%	23.2%	220	100.0%	20.2%
	Yes +	240	27.6%	88.9%	630	72.4%	76.8%	870	100.0%	79.8%
	Total	270	24.8%	100.0%	820	75.2%	100.0%	1,090	100.0%	100.0%
Attended career-related lectures	No	90	18.8%	33.3%	390	81.3%	47.6%	480	100.0%	44.0%
	Yes +	180	29.5%	66.7%	430	70.5%	52.4%	610	100.0%	56.0%
	Total	270	24.8%	100.0%	820	75.2%	100.0%	1,090	100.0%	100.0%
In study groups with other students	No	50	13.9%	19.2%	310	86.1%	37.8%	360	100.0%	33.3%
	Yes +	210	29.2%	80.8%	510	70.8%	62.2%	720	100.0%	66.7%
	Total	260	24.1%	100.0%	820	75.9%	100.0%	1,080	100.0%	100.0%

		Obtained bachelor's degree			Did not obtain bachelor's degree			Total		
Variable	Category	Count*	Row %	Column %	Count*	Row %	Column %	Count*	Row %	Column %
Contact with faculty outside class	No	90	19.1%	33.3%	380	80.9%	46.3%	470	100.0%	43.1%
	Yes +	180	29.0%	66.7%	440	71.0%	53.7%	620	100.0%	56.9%
	Total	270	24.8%	100.0%	820	75.2%	100.0%	1,090	100.0%	100.0%
Participated in school clubs	No	120	17.1%	46.2%	580	82.9%	69.9%	700	100.0%	64.2%
	Yes +	140	35.9%	53.8%	250	64.1%	30.1%	390	100.0%	35.8%
	Total	260	23.9%	100.0%	830	76.1%	100.0%	1,090	100.0%	100.0%
Went places with friends from school	No	10	5.3%	3.8%	180	94.7%	22.0%	190	100.0%	17.6%
	Yes +	250	28.1%	96.2%	640	71.9%	78.0%	890	100.0%	82.4%
	Total	260	24.1%	100.0%	820	75.9%	100.0%	1,080	100.0%	100.0%
In student assist. centers/programs	No	150	19.7%	55.6%	610	80.3%	74.4%	760	100.0%	69.7%
	Yes +	120	36.4%	44.4%	210	63.6%	25.6%	330	100.0%	30.3%
	Total	270	24.8%	100.0%	820	75.2%	100.0%	1,090	100.0%	100.0%
Participated intramural activities	No	90	16.1%	33.3%	470	83.9%	57.3%	560	100.0%	51.4%
	Yes +	180	34.0%	66.7%	350	66.0%	42.7%	530	100.0%	48.6%
	Total	270	24.8%	100.0%	820	75.2%	100.0%	1,090	100.0%	100.0%

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10. + Indicator or reference group.

To determine if the experiences during college variables affected the outcome of transfer and baccalaureate attainment (research question 5), I used logistic regression with the BPS dataset to determine if the 13 independent variables significantly predicted whether students would transfer or obtain a bachelor's degree (dependent variables). Counts for these variables are represented in Table 36.

Table 36

BPS Dataset: Counts and Means—Experiences During College Variables Related to Transfer Status and Baccalaureate Degree Attained Overall

Variable	*n**	Min	Max	Mean	SD
Transfer status	1,110	0.00	1.00	.4714	.49941
Bachelor's degree	1,110	0.00	1.00	.7548	.43043
1st college attended	550	0.00	1.00	.1633	.36998
Students attendance status	1,190	0.00	1.00	.2399	.42720
Major was vocational or academic	1,090	0.00	1.00	.8246	.38048
GPA A's and B's	1,000	0.00	1.00	.7332	.44251
Met advisor concerning academic plans	1,280	0.00	1.00	.8324	.37364
Talked with faculty about academic matters	1,280	0.00	1.00	.7956	.40341
Attended career-related lectures	1,280	0.00	1.00	.5505	.49764
In study groups with other students	1,280	0.00	1.00	.6638	.47260
Contact with faculty outside class	1,280	0.00	1.00	.5709	.49515
Participated in school clubs	1,280	0.00	1.00	.3579	.47956
Went places with friends from school	1,280	0.00	1.00	.8143	.38905
In student assist. centers/programs	1,280	0.00	1.00	.2999	.45840
Participated intramural activities	1,280	0.00	1.00	.4808	.49983
Valid N (listwise)	290				

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

The 13 independent variables were first tested for multicolinearity to determine if they were truly independent from each other. Even though a high number (44 of 78) of the groupings of the variables significantly contained much of the same information (see Table 37), none of the 13 variables were substantially correlated at above .50 (Leech, 2008, p. 95).

Table 37

BPS Dataset: Correlations—Experiences During College Variables Related to Transfer Status and Baccalaureate Degree Attained Overall

Correlations [a]

Variable	Result	1st college attended	Students attendance status	Major was vocational or academic	GPA A's and B's	Met advisor concerning academic plans	Talked with faculty about academic matters	Attended career-related lectures	In study groups with other students	Contact with faculty outside class	Participated in school clubs	Went places with friends from school	In student assist. centers/ program	Participated intramural activities
1st college attended	Pearson correlation	1	-.042	.236**	-.081	.005	.033	.082	.029	.046	.006	.149**	.016	.065
	Sig. (2-tailed)		.431	.000	.135	.931	.536	.128	.587	.397	.912	.005	.766	.231
Students attendance status	Pearson correlation	-.042	1	-.090	-.050	-.176**	-.129*	-.156**	-.223**	-.166**	-.183**	-.292**	-.145**	-.172**
	Sig. (2-tailed)	.431		.093	.357	.001	.016	.004	.000	.002	.001	.000	.007	.001
Major was vocational or academic	Pearson correlation	.236**	-.090	1	.001	.096	.034	.102	.001	.098	.055	.231**	.025	.085
	Sig. (2-tailed)	.000	.093		.990	.074	.534	.059	.988	.069	.305	.000	.645	.113
GPA A's and B's	Pearson correlation	-.081	-.050	.001	1	-.023	.026	.041	.009	-.013	-.045	-.003	.014	.117*
	Sig. (2-tailed)	.135	.357	.990		.667	.632	.446	.874	.803	.402	.959	.799	.029
Met advisor concerning academic plans	Pearson correlation	.005	-.176**	.096	-.023	1	.296**	.094	.120*	.100	.034	.186**	.025	.098
	Sig. (2-tailed)	.931	.001	.074	.667		.000	.080	.025	.062	.531	.001	.645	.070
Talked with faculty about academic matters	Pearson correlation	.033	-.129*	.034	.026	.296**	1	.192**	.124*	.287**	.124*	.177**	.130*	.205**
	Sig. (2-tailed)	.536	.016	.534	.632	.000		.000	.021	.000	.021	.001	.016	.000
Attended career-related lectures	Pearson correlation	.082	-.156**	.102	.041	.094	.192**	1	.287**	.191**	.224**	.246**	.185**	.254**
	Sig. (2-tailed)	.128	.004	.059	.446	.080	.000		.000	.000	.000	.000	.001	.000
In study groups with other students	Pearson correlation	.029	-.223**	.001	.009	.120*	.124*	.287**	1	.184**	.229**	.330**	.200**	.188**
	Sig. (2-tailed)	.587	.000	.988	.874	.025	.021	.000		.001	.000	.000	.000	.000
Contact with faculty outside class	Pearson correlation	.046	-.166**	.098	-.013	.100	.287**	.191**	.184**	1	.305**	.191**	.243**	.158**
	Sig. (2-tailed)	.397	.002	.069	.803	.062	.000	.000	.001		.000	.000	.000	.003
Participated in school clubs	Pearson correlation	.006	-.183**	.055	-.045	.034	.124*	.224**	.229**	.305**	1	.232**	.400**	.398**
	Sig. (2-tailed)	.912	.001	.305	.402	.531	.021	.000	.000	.000		.000	.000	.000
Went places with friends from school	Pearson correlation	.149**	-.292**	.231**	-.003	.186**	.177**	.246**	.330**	.191**	.232**	1	.173**	.261**
	Sig. (2-tailed)	.005	.000	.000	.959	.001	.001	.000	.000	.000	.000		.001	.000
In student assist. centers/program	Pearson correlation	.016	-.145**	.025	.014	.025	.130*	.185**	.200**	.243**	.400**	.173**	1	.253**
	Sig. (2-tailed)	.766	.007	.645	.799	.645	.016	.001	.000	.000	.000	.001		.000
Participated intramural activities	Pearson correlation	.065	-.172**	.085	.117*	.098	.205**	.254**	.188**	.158**	.398**	.261**	.253**	1
	Sig. (2-tailed)	.231	.001	.113	.029	.070	.000	.000	.000	.003	.000	.000	.000	

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

a. Listwise N=346

Transfer status logistic regressions. The logistic regressions were run for transfer status in two blocks. In the first block the variable first college attended-hybrid versus two-year college was entered. When entering only this one variable the model was not statistically significant (χ^2 = 2.717, *df* = 1, *n* = 290, *p* > .05).

In the second block the remaining 12 covariates were added. When all 13 predictor variables were considered together, they also did not significantly predict whether or not a student would transfer, (χ^2 = 18.587, *df* = 13, *n* = 290, *p* > .05). The variable first college attended, however was significant *p* = .029. The differences between these test results and the chi-squared previously run on transfer status (Table 11) appear to be related to the smaller sample size for the logistic regression (290 vs. 430) and possibly by controlling for the independent variables for the experiences during college variables.

Baccalaureate degree attained overall logistic regressions. The logistic regressions were run in two blocks. In the first block the variable first college attended-hybrid versus two-year college was entered. When entering only this one variable the model was statistically significant (χ^2 = 19.739, *df* = 1, *n* = 290, *p* < .001).

In the second block the remaining 12 covariates were added. When all 13 predictor variables were considered together, they significantly predicted whether or not a student would obtain a bachelor's degree, (χ^2 = 51.245, *df* = 13, *n* = 290, *p* < .001). The combination of the 13 independent variables was able to correctly predict 85% of the time whether students would obtain a baccalaureate degree. The independent covariate variables were better able to predict those who would not obtain a bachelor's degree (98%) than those who would obtain a bachelor's degree (23%). Three variables in the model were significant, and they were first college attended-hybrid college, with an odds ratio [Exp(B)] of 4.362 (95% CI = 1.974-9.637), students

attendance status-full-time, with an odds ratio [Exp(B)] of 4.572 (95% CI = 1.714-12.194), and GPAs of mostly A's and B's, with an odds ratio [Exp(B)] of 2.076 (95% CI = 1.030-4.187). These results indicate that the odds of obtaining a bachelor's degree improved by 4.4 for those who attended a hybrid college versus a two-year college. It also indicates that the odds of obtaining a bachelor's degree improved by 4.6 for those who attended full-time, and improved by 2.1 for those who received mostly A's and B's. These results are consistent with literature showing greater baccalaureate attainment for those who attend full-time and receive higher grades (Berkner et al., 1996; Lee & Frank, 1990; Sandy et al., 2006). The second block presents pseudo R^2 estimates of effect sizes, indicating that 16% (Cox & Snell R^2) and 27% (Nagelkerke R^2) of the variance in whether students completed a baccalaureate degree could be predicted by the linear combination of the variables in the model. Table 38 below presents the odds ratios, which indicated that the odds of obtaining a baccalaureate degree are greater when students attend a hybrid college, and/or attend full-time, and/or receive mostly A's and B's.

Table 38

BPS Dataset: Logistic Regression—Experiences During College Variables Related to Baccalaureate Degree Attained Overall

Variable	B	S.E.	Wald	df	p	Exp(B)
1st college attended—treatment	1.473	.404	13.261	1	.000	4.362***
Students' attendance status—FT	1.520	.501	9.223	1	.002	4.572**
Major was vocational	-.970	.591	2.696	1	.101	.379
GPA A's and B's	.731	.358	4.167	1	.041	2.076*
Met advisor concerning academic plans	.183	.541	.114	1	.735	1.200
Talked with faculty about academic matters	.013	.464	.001	1	.977	1.013
Attended career-related lectures	.553	.378	2.134	1	.144	1.738
In study groups with other students	-.136	.392	.120	1	.729	.873
Contact with faculty outside class	-.421	.396	1.133	1	.287	.656
Participated in school clubs	.418	.451	.859	1	.354	1.519
Went places with friends from school	-.321	.523	.377	1	.539	.725
In student assistance centers/programs	.685	.430	2.540	1	.111	1.984
Participated in intramural activities	.065	.385	.029	1	.865	1.068
Constant	-3.371	.755	19.957	1	.000	.034***

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

NELS dataset baccalaureate degree attained overall-social background variables.

NELS was a national longitudinal sample that tracked eighth graders that were similar in age starting in the spring of 1988 versus BPS tracking first-time college beginners regardless of age. NELS students were again surveyed in 1990 when most of the students were high school sophomores, in 1992 when many were high school seniors, in 1994 when they were college sophomores, and in 2000-when those who graduated would have been two to four years out of college. Typically these students would have entered college in 1992–1993, and graduated in 1995–1997 (NCES, 2008b). The first variable grouping related to the NELS dataset was social background variables, which presented an overview of the makeup of those analyzed from this data source. A total of 730 students attended a control/two-year college as compared with a treatment/hybrid college, with a majority (89%) attending the former. A slight majority (56%) was female and three quarters (75%) of the respondent parents had attended at least some

college, showing that 25% of the students were first-generation college students (Chen, 2005; Choy, 2001; Horn & Nunez, 2000; Lohfink & Paulsen, 2005; Nunez & Cuccaro-Alamin, 1998; U.S. Department of Education, 2001a). A majority of the respondents was White (72%), the second largest race background being Hispanic (15%). These data are similar to national survey results for two-year colleges from 2003-2004 in gender (59% female), but not for race where White students represented more (60%) than those represented in this study (Horn & Nevill, 2006; Provasnik & Planty, 2008). These differences may relate to the selection of hybrid and two-year colleges found in this study, the small number of students found attending hybrid colleges, or BPS oversampling to make the data representational. Counts and means for these variables are represented in Table 39.

Table 39

NELS Dataset: Descriptive Statistics—Social Background Variables Related to Baccalaureate Degree Attained Overall

		Bachelor's degree											
		Obtained bachelor's degree				Did not obtain bachelor's degree				Total			
Variable	Category	Count*	Row %	Column %	Mean	Count*	Row %	Column %	Mean	Count*	Row %	Column %	Mean
1st college attended	Control	200	30.8%	80.0%		450	69.2%	93.8%		650	100.0%	89.0%	
	Treatment +	50	62.5%	20.0%		30	37.5%	6.3%		80	100.0%	11.0%	
	Total	250	34.2%	100.0%		480	65.8%	100.0%		730	100.0%	100.0%	
Gender	Male	240	43.6%	42.1%		310	56.4%	45.6%		550	100.0%	44.0%	
	Female +	330	47.1%	57.9%		370	52.9%	54.4%		700	100.0%	56.0%	
	Total	570	45.6%	100.0%		680	54.4%	100.0%		1,250	100.0%	100.0%	
Socioeconomic status composite					.213				-.247	0			-.032
Parents' higher ed level	High school or + less education	90	31.0%	17.3%		200	69.0%	32.3%		290	100.0%	25.4%	
	Some college, bachelor's or more	430	50.6%	82.7%		420	49.4%	67.7%		850	100.0%	74.6%	
	Total	520	45.6%	100.0%		620	54.4%	100.0%		1,140	100.0%	100.0%	
Race	White, not Hispanic +	410	47.7%	74.5%		450	52.3%	70.3%		860	100.0%	72.3%	
	Black, not Hispanic	20	28.6%	3.6%		50	71.4%	7.8%		70	100.0%	5.9%	
	Hispanic or Latino	60	33.3%	10.9%		120	66.7%	18.8%		180	100.0%	15.1%	
	Asian or Pacific Islander	60	75.0%	10.9%		20	25.0%	3.1%		80	100.0%	6.7%	
	Total	550	46.2%	100.0%		640	53.8%	100.0%		1,190	100.0%	100.0%	

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

+ Indicator or reference group.

To answer the first and second research questions, I used logistic regression with the NELS dataset to determine if the five predictor variables in relation to the social background variables significantly predicted whether students would obtain a baccalaureate degree (dependent variable). Counts and means for these variables are represented in Table 40.

Table 40

NELS Dataset: Counts and Means—Social Background Variables Related to Baccalaureate Degree Attained Overall

Variable	*n**	Min	Max	Mean	SD
Bachelor's degree	1,250	0.00	1.00	.5425	.49839
1st college attended	1,740	0.00	1.00	.0843	.27790
Gender	2,550	0.00	1.00	.5400	.49800
Socioeconomic status composite	2,390	-2.226	1.854	-.11860	.689018
Parents' higher ed level	2,300	1.00	2.00	1.7090	.45432
Race	2,400	1.00	4.00	1.5840	.95321
Valid N (listwise)	580				

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

The five independent variables were first tested for multicolinearity to determine if they were truly independent from each other. Whereas five groupings of variables significantly contained much of the same information (see Table 41), only respondent parents' higher education level/socioeconomic status was substantially correlated at above .50 (Leech, 2008, p. 95).

Table 41

NELS Dataset: Correlations—Social Background Variables Related to Baccalaureate Degree Attained Overall

Correlations [a]

Variable	Result	1st college attended	Gender	Socioeconomic status composite	Parents' higher ed level	Race
1st college attended	Pearson correlation	1	.011	.107**	.018	-.066*
	Sig. (2-tailed)		.673	.000	.503	.014
Gender	Pearson correlation	.011	1	-.041	-.052	-.028
	Sig. (2-tailed)	.673		.126	.054	.302
Socioeconomic status composite	Pearson correlation	.107**	-.041	1	.580**	-.185**
	Sig. (2-tailed)	.000	.126		.000	.000
Parents' higher ed level	Pearson correlation	.018	-.052	.580**	1	-.060*
	Sig. (2-tailed)	.503	.054	.000		.025
Race	Pearson correlation	-.066*	-.028	-.185**	-.060*	1
	Sig. (2-tailed)	.014	.302	.000	.025	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

a. Listwise N=1386

As a result of respondent parents' higher education level/socioeconomic status composite being substantially correlated at .58 the regression was run three times with the first being with all the independent variables, the second removing socioeconomic status composite while keeping respondent parents' higher education level, then doing just the opposite to see if the correlations impacted the results (Leech et al., 2008). In the second and third run of the models the remaining independent variable (respondent parents' higher education level or socioeconomic status composite) remained significant and further increased the odds of obtaining a baccalaureate degree by removing the other highly correlated variable. Since the

socioeconomic status composite incorporates an element of respondent parents' higher education level I removed the parents' higher education level variable.

The logistic regressions were run in two blocks. In the first block the variable first college attended-hybrid versus two-year college was entered. When only this one variable was entered the model was statistically significant ($\chi^2 = 26.726$, $df = 1$, $n = 580$, $p < .001$).

In the second block the remaining three covariates were added. When all four predictor variables were considered together, they significantly predicted whether or not a student would obtain a bachelor's degree ($\chi^2 = 106.087$, $df = 6$, $n = 580$, $p < .001$). The combination of the four independent variables was able to correctly predict 72% of the time whether students would obtain a baccalaureate degree. The independent covariate variables were better able to predict those who would not obtain a BA degree (89%) than those who would obtain a BA degree (41%). All four variables in the model (attending a hybrid college with an odds ratio [Exp(B)] of 3.420 (95% CI = 1.907-6.135), being female with an odds ratio [Exp(B)] of 1.559 (95% CI = 1.090-2.230), having a higher socioeconomic status composite with an odds ratio [Exp(B)] of 2.843 (95% CI = 2.136-3.784), and race with an odds ratio [Exp(B)] of 3.344 (95% CI = 1.464-7.638)) were significant in improving the odds of obtaining a BA degree. In relation to receiving a baccalaureate degree, women were 1.6 times more likely than men and as the socioeconomic status increased the likelihood of obtaining a baccalaureate increased 2.8 times. Asian students were 3.3 times more likely to receive bachelor degrees than White students. These results are consistent with literature in relation to baccalaureate attainment for women, those from higher economic strata, and race (Horn & Nevill, 2006; Provasnik & Planty, 2008). The second block presents pseudo R^2 estimates of effect sizes, indicating that 15% (Cox & Snell R^2) and 21% (Nagelkerke R^2) of the variance in whether students completed a baccalaureate degree could be

predicted by the linear combination of the variables in the model. Table 42 below presents the odds ratios.

Table 42

NELS Dataset: Logistic Regression—Social Background Variables Related to Baccalaureate Degree Attained Overall

Variable	B	S.E.	Wald	df	p	Exp(B)
1st college attended—treatment	1.230	.298	17.017	1	.000	3.420***
Gender—female	.444	.183	5.911	1	.015	1.559*
Socioeconomic status composite	1.045	.146	51.274	1	.000	2.843***
Race—White			10.672	3	.014	**
—Black, not Hispanic	-.639	.459	1.937	1	.164	.528
—Hispanic or Latino	-.021	.269	.006	1	.939	.980
—Asian or Pacific Islander	1.207	.421	8.210	1	.004	3.344**
Constant	-.937	.152	37.834	1	.000	.392***

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

NELS dataset baccalaureate degree attained overall-other precollege personal characteristics variables. The second independent variable grouping also presented an additional set of variables that added to the overview of the makeup of those analyzed from the NELS dataset and was called other precollege personal characteristics. Overall, a majority of the students (97%) had a high school degree. In this dataset about one-fifth of the students (21%) had taken courses in remedial English and a quarter (25%) had taken courses in remedial math. It appears that there was a distinct difference within the independent variable of the expectation of obtaining at least a bachelor's degree between the dependent variable of baccalaureate obtained. Almost all (98%) of the students who completed a bachelor's degree expected to do so. For those who did not complete a bachelor's degree, only 68% expected to do so. Counts and means for these particular variables and the other precollege personal characteristics are represented in Table 43.

Table 43

NELS Dataset: Descriptive Statistics—Other Precollege Personal Characteristics Variables Related to Baccalaureate Degree Attained Overall

		Bachelor's degree											
		Obtained bachelor's degree				Did not obtain bachelor's degree				Total			
Variable	Category	Count*	Row %	Column %	Mean	Count*	Row %	Column %	Mean	Count*	Row %	Column %	Mean
1st college attended	Control	200	30.8%	80.0%		450	69.2%	93.8%		650	100.0%	89.0%	
	Treatment +	50	62.5%	20.0%		30	37.5%	6.3%		80	100.0%	11.0%	
	Total	250	34.2%	100.0%		480	65.8%	100.0%		730	100.0%	100.0%	
Centered log10 of SATM					-.05				.01				-.02
Centered log10 of SATV					-.06				.01				-.02
High school degree	Yes +	570	47.1%	100.0%		640	52.9%	94.1%		1,210	100.0%	96.8%	
	No	0	0.0%	.0%		40	100.0%	5.9%		40	100.0%	3.2%	
	Total	570	45.6%	100.0%		680	54.4%	100.0%		1,250	100.0%	100.0%	
Courses in remedial English	Yes +	90	47.4%	17.0%		100	52.6%	27.8%		190	100.0%	21.3%	
	No	440	62.9%	83.0%		260	37.1%	72.2%		700	100.0%	78.7%	
	Total	530	59.6%	100.0%		360	40.4%	100.0%		890	100.0%	100.0%	
Courses in remedial math	Yes +	110	50.0%	20.8%		110	50.0%	30.6%		220	100.0%	24.7%	
	No	420	62.7%	79.2%		250	37.3%	69.4%		670	100.0%	75.3%	
	Total	530	59.6%	100.0%		360	40.4%	100.0%		890	100.0%	100.0%	
Expectations of at least bachelor's	Yes +	550	55.0%	98.2%		450	45.0%	68.2%		1,000	100.0%	82.0%	
	No	10	4.5%	1.8%		210	95.5%	31.8%		220	100.0%	18.0%	
	Total	560	45.9%	100.0%		660	54.1%	100.0%		1,220	100.0%	100.0%	

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

+ Indicator or reference group

To answer the first and third research questions, I used logistic regression with the NELS dataset to determine if the seven independent variables in relation to other precollege characteristics variables significantly predicted whether students would obtain a bachelor's degree (dependent variable). Counts and means for these variables are represented in Table 44.

Table 44

NELS Dataset: Counts and Means—Other Precollege Personal Characteristics Variables Related to Baccalaureate Degree Attained Overall

Variable	*n**	Min	Max	Mean	SD
Bachelor's degree	1,250	0.00	1.00	.5425	.49839
1st college attended	1,740	0.00	1.00	.0843	.27790
Centered log10 of SATM	2,550	-.600	.100	.0000	.16898
Centered log10 of SATV	2,550	-.590	.110	.0000	.18870
High school degree	2,550	0.00	1.00	.0655	.24744
Courses in remedial English	1,600	0.00	1.00	.7870	.40955
Courses in remedial math	1,600	0.00	1.00	.7561	.42957
Expectations of at least bachelor's	2,490	0.00	1.00	.2236	.41674
Valid N (listwise)	440				

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

The seven independent variables were first tested for multicolinearity to determine if they were truly independent from each other. Whereas nine groupings of variables significantly contained much of the same information (see Table 45), only centered log of SATV/centered log of SATM and courses in remedial math/courses in remedial English were substantially correlated above .50 (Leech, 2008, p. 95). Since each model for the other precollege characteristics variables remained significant with all the variables included, I decided not to remove any of the independent variables and no further action was taken in relation to multicolinearity.

Table 45

NELS Dataset: Correlations—Other Precollege Personal Characteristics Variables Related to Baccalaureate Degree Attained Overall

Correlations [a]

Variable	Result	1st college attended	Centered log10 of SATM	Centered log10 of SATV	High school degree	Courses in remedial English	Courses in remedial math	Expectations of at least bachelor's
1st college attended	Pearson correlation	1	-.022	-.021	-.006	-.067*	.004	-.049
	Sig. (2-tailed)		.501	.517	.848	.041	.915	.141
Centered log10 of SATM	Pearson correlation	-.022	1	.966**	.123**	-.058	-.065*	.043
	Sig. (2-tailed)	.501		0.000	.000	.079	.047	.188
Centered log10 of SATV	Pearson correlation	-.021	.966**	1	.125**	-.062	-.098**	.041
	Sig. (2-tailed)	.517	0.000		.000	.061	.003	.213
High School degree	Pearson correlation	-.006	.123**	.125**	1	.009	.033	.039
	Sig. (2-tailed)	.848	.000	.000		.794	.310	.234
Courses in remedial English	Pearson correlation	-.067*	-.058	-.062	.009	1	.510**	-.067*
	Sig. (2-tailed)	.041	.079	.061	.794		.000	.041
Courses in remedial math	Pearson correlation	.004	-.065*	-.098**	.033	.510**	1	-.091**
	Sig. (2-tailed)	.915	.047	.003	.310	.000		.006
Expectations of at least bachelor's	Pearson correlation	-.049	.043	.041	.039	-.067*	-.091**	1
	Sig. (2-tailed)	.141	.188	.213	.234	.041	.006	

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

a. Listwise N=923

The logistic regressions were run in two blocks. In the first block the variable first college attended-hybrid versus two-year college was entered. When only this one variable was entered, the model was statistically significant ($\chi^2 = 7.429$, $df = 1$, $n = 440$, $p < .01$).

In the second block the remaining six covariates were added. When all seven predictor variables were considered together, they significantly predicted whether or not a student would obtain a bachelor's degree, ($\chi^2 = 56.511$, $df = 7$, $n = 440$, $p < .001$). The combination of the seven independent variables was able to correctly predict 64% of the time whether students would obtain a baccalaureate degree. The independent covariate variables were better able to predict those who would obtain a bachelor's degree (84%) than those who would not obtain a bachelor's degree (43%). Only two variables in the model were significant, and they were first college attended-hybrid college, with an odds ratio [Exp(B)] of 2.337 (95% CI = 1.292-4.228) and expectations of a bachelor's degree, with an odds ratio [Exp(B)] of 23.151 (95% CI = 3.077-174.177). This indicates that the odds of obtaining a bachelor's degree improved by 2.3 for those who attended a hybrid college versus a two-year college, and the odds of obtaining a bachelor's degree improved by 23.2 for those who had expectations of obtaining a bachelor's degree. The second block presents pseudo R^2 estimates of effect sizes, indicating that 12% (Cox & Snell R^2) and 16% (Nagelkerke R^2) of the variance in whether students completed a baccalaureate degree could be predicted by the linear combination of the variables in the model. Table 46 presents the odds ratios, which show that the odds of obtaining a baccalaureate degree are greater when students attend a hybrid college and/or they have expectations of obtaining a bachelor's degree. The results of increasing bachelor degree attainment by having the expectation of obtaining a baccalaureate degree are consistent with literature (Alfonso, 2006; Lorenzo, 2005; Pascarella, 1997; U.S. Department of Education, 2001b).

Table 46

NELS Dataset: Logistic Regression—Other Precollege Personal Characteristics Variables Related to Baccalaureate Degree Attained Overall

Variable	B	S.E.	Wald	df	p	Exp(B)
1st college attended—treatment	.849	.302	7.885	1	.005	2.337**
Centered log10 of SATM	-.840	2.151	.152	1	.696	.432
Centered log10 of SATV	-.163	1.894	.007	1	.931	.849
High school degree—yes	2.012	1.101	3.338	1	.068	7.479
Remedial English—yes	.537	.284	3.576	1	.059	1.712
Remedial math—yes	.295	.279	1.116	1	.291	1.343
Expectations of a BA—yes	3.142	1.030	9.313	1	.002	23.151**
Constant	-5.764	1.519	14.395	1	.000	.003***

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

NELS dataset baccalaureate degree attained overall-external demands as students enter college variables. The third independent variable grouping from the NELS dataset presented a glimpse of some of the external demands these students faced as they began their college experience. A total of 730 students attended either a control or two-year college as compared with a treatment or hybrid college, with a majority (89%) attending the former. The data appear to present differences between those who obtained a bachelor's degree and those who did not, within the three variables of married ever or marriage-like relationship, dependent children, and hours worked. A high number (90%) of the respondents were never in a marriage-like relationship. The number of respondents in the sample who had dependent children was only 6%. There appears to be a difference between the respondents who received a baccalaureate degree and those who did not, within the category of working 40 hours per week or more. For those who received a bachelor's degree, only 14% worked 40 or more hours as compared with

37% for those who did not complete a degree. Counts for these particular variables and the other external demands as students enter college are represented in Table 47.

Table 47

NELS Dataset: Descriptive Statistics—External Demands as Students Enter College Variables Related to Baccalaureate Degree Attained Overall

		Obtained bachelor's degree			Did not Obtain bachelor's degree			Total		
Variable	Category	Count*	Row %	Column %	Count*	Row %	Column %	Count*	Row %	Column %
1st college attended	Control	200	30.8%	80.0%	450	69.2%	93.8%	650	100.0 %	89.0%
	Treatment +	50	62.5%	20.0%	30	37.5%	6.3%	80	100.0 %	11.0%
	Total	250	34.2%	100.0%	480	65.8%	100.0%	730	100.0 %	100.0%
Married ever or marriage-like relationship	No +	550	49.1%	96.5%	570	50.9%	85.1%	1120	100.0 %	90.3%
	Yes	20	16.7%	3.5%	100	83.3%	14.9%	120	100.0 %	9.7%
	Total	570	46.0%	100.0%	670	54.0%	100.0%	1240	100.0 %	100.0%
Dependent children	No +	510	50.0%	98.1%	510	50.0%	89.5%	1020	100.0 %	93.6%
	Yes	10	14.3%	1.9%	60	85.7%	10.5%	70	100.0 %	6.4%
	Total	520	47.7%	100.0%	570	52.3%	100.0%	1090	100.0 %	100.0%
Hours worked categories	1 to 20 hours +	200	57.1%	55.6%	150	42.9%	30.0%	350	100.0 %	40.7%
	21 to 39 hours	110	39.3%	30.6%	170	60.7%	34.0%	280	100.0 %	32.6%
	More than 40 hours	50	21.7%	13.9%	180	78.3%	36.0%	230	100.0 %	26.7%
	Total	360	41.9%	100.0%	500	58.1%	100.0%	860	100.0 %	100.0%

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

+ Indicator or reference group

To answer the fourth research question, I used logistic regression with the NELS dataset to determine if the four independent variables in relation to external demands as students enter college variables significantly predicted whether students obtained a bachelor's degree (dependent variable). Counts and means for these variables are represented in Table 48.

Table 48

NELS Dataset: Counts and Means—External Demands as Students Enter College Variables Related to Baccalaureate Degree Attained Overall

Variable	*n**	Min	Max	Mean	SD
Bachelor's degree	1,250	0.00	1.00	.5425	.49839
1st college attended	1,740	0.00	1.00	.0843	.27790
Married ever or marriage-like relationship	2,530	0.00	1.00	.1301	.33653
Dependent children	2,160	0.00	1.00	.0889	.28471
Hours worked categories	1,820	1.00	3.00	2.0796	.82123
Valid N (listwise)	480				

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

The four independent variables were first tested for multicolinearity to determine if they were truly independent from each other. Whereas two variables (dependent children and married ever or marriage-like relationship) significantly contained much of the same information (see Table 49), none of the four combinations were substantially correlated at above .50 no further action was required (Leech, 2008, p. 95).

Table 49

NELS Dataset: Correlations—External Demands as Students Enter College Variables Related to Baccalaureate Degree Attained Overall

Correlations [a]

Variable	Result	1st college attended	Married ever or marriage-like relationship	Dependent children	Hours worked categories
1st college attended	Pearson correlation	1	-.020	-.028	-.014
	Sig. (2-tailed)		.496	.342	.644
Married ever or marriage-like relationship	Pearson correlation	-.020	1	.390**	.124**
	Sig. (2-tailed)	.496		.000	.000
Dependent children	Pearson correlation	-.028	.390**	1	.023
	Sig. (2-tailed)	.342	.000		.432
Hours worked categories	Pearson correlation	-.014	.124**	.023	1
	Sig. (2-tailed)	.644	.000	.432	

**. Correlation is significant at the 0.01 level (2-tailed).

a. Listwise N=1136

The logistic regressions were run in two blocks. In the first block the variable first college attended-hybrid versus two-year college was entered. When only this one variable was entered, the model was statistically significant ($\chi^2 = 21.812$, $df = 1$, $n = 480$, $p < .001$).

In the second block the remaining three covariates were added. When all four predictor variables were considered together, they significantly predicted whether or not a student would obtain a bachelor's degree, ($\chi^2 = 66.996$, $df = 5$, $n = 480$, $p < .001$). The combination of the four independent variables was able to correctly predict 69% of the time whether students would obtain a baccalaureate degree. The independent covariate variables were better able to predict those who would not obtain a bachelor's degree (96%) than those who would obtain a bachelor's degree (17%). Three of the variables were significant in predicting who would obtain a baccalaureate degree. They were first college attended-hybrid college, with an odds ratio

[Exp(B)] of 3.807 (95% CI = 1.963-7.384), not having children, with an odds ratio [Exp(B)] of 6.293 (95% CI = 1.411-28.061), working 1 to 20 hours as compared to both those who worked 21 to 39 who had an odds ratios of [Exp(B)] of .553 (95% CI = .350-.873) with a negative effect and those who worked 40 or more hours having a [Exp(B)] of .279 (95% CI = .158-.493) with a negative effect, respectively. These results indicated that the odds of obtaining a BA degree were significant and improved for those who attended a hybrid college versus a two-year college, those without children, and those who only worked 1 to 20 hours. The second block presents pseudo R^2 estimates of effect sizes, indicating that 13% (Cox & Snell R^2) and 18% (Nagelkerke R^2) of the variance in whether students completed a baccalaureate degree could be predicted by the linear combination of the variables in the model. These results are similar to findings in literature that show that those without children and who work less are more likely to obtain baccalaureate degrees (Horn & Nevill, 2006; Provasnik & Planty, 2008). The odds ratios are presented in Table 50.

Table 50

NELS Dataset: Logistic Regression—External Demands as Students Enter College Variables Related to Baccalaureate Degree Attained Overall

Variable	B	S.E.	Wald	df	p	Exp(B)
1st college attended—treatment	1.337	.338	15.648	1	.000	3.807***
Never married	1.172	.633	3.427	1	.064	3.227
No dependent children	1.839	.763	5.816	1	.016	6.293*
Worked 1–20 hours			20.680	2	.000	***
Worked 21–39 hours	-.593	.233	6.458	1	.011	.553*
Worked more than 40 hours	-1.277	.290	19.352	1	.000	.279***
Constant	-3.199	.903	12.544	1	.000	.041***

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

NELS dataset baccalaureate degree attained overall-experiences during college variables. The final independent grouping provided a picture of some of the activities, involvements, and collegiate attendance patterns from the NELS dataset. A total of 830 students attended a control or two-year college as compared with a treatment or hybrid college, with a majority (90%) attending the former. For each of the independent variables presented, those who obtained a baccalaureate degree had a higher response rate to the comparison category than those who did not have a bachelor's degree, except for the vocational/technical courses taken at any school attended. The respondents who did not obtain a bachelor's degree had a higher percentage (15%) of respondents who stated that they had taken vocational or technology courses in any school versus those who obtained a baccalaureate degree (5%). All of the involvement activities had higher percentages for those who completed a bachelor's degree than those who did not. These findings are consistent with literature that show increased baccalaureate attainment for those students who are academically and socially engaged (Tinto, 1993). Counts for these particular variables are represented in Table 51.

Table 51

NELS Dataset: Descriptive Statistics—Experiences During College Variables Related to Baccalaureate Degree Attained Overall

		Obtained bachelor's degree			Did not obtain bachelor's degree			Total		
Variable	Category	Count*	Row %	Column %	Count*	Row %	Column %	Count*	Row %	Column %
1st college attended	Control	200	30.8%	80.0%	450	69.2%	93.8%	650	100.0%	89.0%
	Treatment +	50	62.5%	20.0%	30	37.5%	6.3%	80	100.0%	11.0%
	Total	250	34.2%	100.0%	480	65.8%	100.0%	730	100.0%	100.0%
Enrollment	FT +	480	55.2%	94.1%	390	44.8%	88.6%	870	100.0%	91.6%
	PT	30	37.5%	5.9%	50	62.5%	11.4%	80	100.0%	8.4%
	Total	510	53.7%	100.0%	440	46.3%	100.0%	950	100.0%	100.0%
Vocational/tech courses at any school	Yes +	30	23.1%	5.3%	100	76.9%	14.9%	130	100.0%	10.5%
	No	540	48.6%	94.7%	570	51.4%	85.1%	1,110	100.0%	89.5%
	Total	570	46.0%	100.0%	670	54.0%	100.0%	1,240	100.0%	100.0%
Student govern/politics	Yes +	50	71.4%	9.4%	20	28.6%	5.6%	70	100.0%	7.9%
	No	480	58.5%	90.6%	340	41.5%	94.4%	820	100.0%	92.1%
	Total	530	59.6%	100.0%	360	40.4%	100.0%	890	100.0%	100.0%
Social clubs, frats/sor	Yes +	130	72.2%	25.0%	50	27.8%	13.9%	180	100.0%	20.5%
	No	390	55.7%	75.0%	310	44.3%	86.1%	700	100.0%	79.5%
	Total	520	59.1%	100.0%	360	40.9%	100.0%	880	100.0%	100.0%
Varsity intercollegiate athletics	Yes +	70	70.0%	13.2%	30	30.0%	8.3%	100	100.0%	11.2%
	No	460	58.2%	86.8%	330	41.8%	91.7%	790	100.0%	88.8%
	Total	530	59.6%	100.0%	360	40.4%	100.0%	890	100.0%	100.0%
Other intercollegiate athletics	Yes +	30	60.0%	5.7%	20	40.0%	5.4%	50	100.0%	5.6%
	No	500	58.8%	94.3%	350	41.2%	94.6%	850	100.0%	94.4%
	Total	530	58.9%	100.0%	370	41.1%	100.0%	900	100.0%	100.0%
Intramural athletics	Yes +	150	68.2%	28.3%	70	31.8%	19.4%	220	100.0%	24.7%
	No	380	56.7%	71.7%	290	43.3%	80.6%	670	100.0%	75.3%
	Total	530	59.6%	100.0%	360	40.4%	100.0%	890	100.0%	100.0%
Volunteer—other students	Yes +	110	61.1%	20.8%	70	38.9%	19.4%	180	100.0%	20.2%
	No	420	59.2%	79.2%	290	40.8%	80.6%	710	100.0%	79.8%
	Total	530	59.6%	100.0%	360	40.4%	100.0%	890	100.0%	100.0%

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

+ Indicator or reference group

To answer the fifth research question, I used logistic regression with the NELS dataset to determine if the nine independent variables in relation to experiences during college variables significantly predicted whether students would obtain a bachelor's degree (dependent variable). Counts and means for these variables are represented in Table 52.

Table 52

NELS Dataset: Counts and Means—Experiences During College Variables Related to Baccalaureate Degree Attained Overall

Variable	*n**	Min	Max	Mean	SD
Bachelor's degree	1,250	0.00	1.00	.5425	.49839
1st college attended—treatment	1,740	0.00	1.00	.0843	.27790
Enrollment—FT	1,630	0.00	1.00	.1421	.34923
Vocational/tech courses at any school	2,530	0.00	1.00	.9114	.28418
Student govern/politics	1,600	0.00	1.00	.9231	.26655
Social clubs, frats/sor	1,600	0.00	1.00	.8380	.36854
Varsity intercollegiate athletics	1,600	0.00	1.00	.9044	.29417
Other intercollegiate athletics	1,600	0.00	1.00	.9568	.20332
Intramural athletics	1,600	0.00	1.00	.7960	.40310
Volunteer—other students	1,600	0.00	1.00	.8442	.36280
Valid N (listwise)	380				

* IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

The nine independent variables were first tested for multicolinearity to determine if they were truly independent from each other. Whereas a number of the groupings of the variables significantly contained much of the same information (see Table 53), none of the nine were substantially correlated at above .50 and no further action was needed (Leech, 2008, p. 95).

Table 53

NELS Dataset: Correlations—Experiences During College Variables Related to Baccalaureate Degree Attained Overall

Correlations [a]										
		1st college attended	Enrollment FT/PT	Vocational/ tech courses at any school	Student govern/ politics	Social clubs, frats/ sor	Varsity intercollegiate athletics	Other intercollegiate athletics	Intramural athletics	Volunteer —other students
1st college attended	Pearson correlation	1	-.020	.005	-.002	.027	.015	.026	.027	.068
	Sig. (2-tailed)		.601	.892	.948	.477	.680	.491	.474	.069
Enrollment FT/PT	Pearson correlation	-.020	1	.007	.064	.152**	.065	.017	.141**	.128**
	Sig. (2-tailed)	.601		.842	.089	.000	.080	.647	.000	.001
Vocational/ tech courses at any school	Pearson correlation	.005	.007	1	-.075*	-.013	.038	.013	.009	-.033
	Sig. (2-tailed)	.892	.842		.044	.726	.315	.738	.819	.382
Student govern/politics	Pearson correlation	-.002	.064	-.075*	1	.199**	.100**	.081*	.185**	.237**
	Sig. (2-tailed)	.948	.089	.044		.000	.007	.031	.000	.000
Social clubs, frats/sor	Pearson correlation	.027	.152**	-.013	.199**	1	.038	.065	.255**	.302**
	Sig. (2-tailed)	.477	.000	.726	.000		.312	.081	.000	.000
Varsity intercollegiate athletics	Pearson correlation	.015	.065	.038	.100**	.038	1	.143**	.185**	.134**
	Sig. (2-tailed)	.680	.080	.315	.007	.312		.000	.000	.000
Other intercollegiate athletics	Pearson correlation	.026	.017	.013	.081*	.065	.143**	1	.228**	.017
	Sig. (2-tailed)	.491	.647	.738	.031	.081	.000		.000	.654
Intramural athletics	Pearson correlation	.027	.141**	.009	.185**	.255**	.185**	.228**	1	.232**
	Sig. (2-tailed)	.474	.000	.819	.000	.000	.000	.000		.000
Volunteer—other students	Pearson correlation	.068	.128**	-.033	.237**	.302**	.134**	.017	.232**	1
	Sig. (2-tailed)	.069	.001	.382	.000	.000	.000	.654	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

a. Listwise N=716

The logistic regressions were run in two blocks. In the first block the variable first college attended-hybrid versus two-year college was entered. When only this one variable was entered the model was statistically significant ($\chi^2 = 5.272$, $df = 1$, $n = 380$, $p < .05$).

In the second block the remaining eight covariates were added. When all nine predictor variables were considered together, they significantly predicted whether or not a student would obtain a bachelor's degree ($\chi^2 = 32.822$, $df = 9$, $n = 380$, $p < .001$). The combination of the nine independent variables was able to correctly predict 60% of the time whether students would obtain a baccalaureate degree. The independent covariate variables were better able to predict those who would not obtain a BA degree (66%) than those who would obtain a BA degree (54%). Three variables in the model were significant, and they were first college attended—hybrid college, with an odds ratio [Exp(B)] of 2.010 (95% CI = 1.076-3.756), students enrollment status—full-time, with an odds ratio [Exp(B)] of 3.501 (95% CI = 1.229-9.977), and students who took vocational or technical courses at any college had a negative effect, with an odds ratio [Exp(B)] of .285 (95% CI = .111-.731). These results indicated that the odds of obtaining a BA degree improve by two times for those who attend a hybrid college versus a two-year college. In addition the odds of obtaining a BA degree improved by 3.5 times for those who enrolled full-time, and decreased by .285 times for those who took vocational or technical courses. The second block presents pseudo R^2 estimates of effect sizes, indicating that 8% (Cox & Snell R^2) and 11% (Nagelkerke R^2) of the variance in whether students completed a baccalaureate degree could be predicted by the linear combination of the variables in the model. These results are consistent with literature showing greater baccalaureate attainment for those who attend full-time and take academic courses (Berkner et al., 1996; Brint & Karabel, 1989;

Dougherty & Kienzl, 2006; Hoachlander et al., 2003; Lee & Frank, 1990; Sandy et al., 2006). Table 54 presents the odds ratios.

Table 54

NELS Dataset: Logistic Regression—Experiences During College Variables Related to Baccalaureate Degree Attained Overall

Variable	B	S.E.	Wald	df	p	Exp(B)
1st college attended—treatment	.698	.319	4.789	1	.029	2.010*
Enrollment—FT	1.253	.534	5.501	1	.019	3.501*
Vocational/tech courses at any school	-1.255	.480	6.830	1	.009	.285**
Student govern/politics	.033	.419	.006	1	.937	1.033
Social clubs, frats/sor	.546	.284	3.712	1	.054	1.727
Varsity intercollegiate athletics	.637	.391	2.653	1	.103	1.890
Other intercollegiate athletics	.447	.605	.545	1	.460	1.563
Intramural athletics	.250	.288	.755	1	.385	1.285
Volunteer—other students	.109	.281	.150	1	.698	1.115
Constant	-1.386	.523	7.028	1	.008	.250**

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

Summary of Findings

Data were analyzed from the BPS and NELS datasets while utilizing chi-squared and logistic regression. The results presented evidence of the significant differences between beginning at a two-year (control) versus a hybrid (treatment) college on transfer and degree attainment. While testing the dependent variables of transfer and baccalaureate attainment using chi squared and then controlling for confounding background independent variables and experiential differences via logistic regression, students who attended hybrid colleges as their first college had a lower likelihood to transfer (with mixed results) and a higher likelihood of graduating with a bachelor's degree than those who began at a two-year or community college. Furthermore, students who began at hybrid colleges earned all degrees (certificates, associate's, and bachelor's) at higher percentages than those who began at two-year colleges. Results taken

from the BPS dataset showed an increased probability of obtaining a baccalaureate degree when students perceived themselves as having above average academic ability, attended full-time, and received GPAs of A's and B's. Results from the NELS dataset confirmed that the likelihood of obtaining a baccalaureate degree was improved when students were female, not first-generational, and Asian or Pacific Islander as compared to White, when they had expectations of a baccalaureate, had no dependent children, worked less than 20 hours, enrolled full-time, had higher socioeconomic composites, and took academic versus vocational or technical courses.

The difference between BPS and NELS independent variable result significances is likely due to the dissimilar sample sizes between the two studies (Keith, 2006; Leech et al., 2008; Sprinthall, 2003). Having 1317 students from the BPS dataset (149 treatment students), and 2584 students from the NELS dataset (230 treatment students) may potentially impact the outcome, power, or ability to reject a false null hypothesis (Keith, 2006), the differences between the two sets of findings between the BPS and NELS, and overall results of this study. Like the study completed by Dougherty and Kienzl (2006), I sought an understanding of first time college student age differences only included in the BPS dataset for those of any age versus from NELS of students with similar ages found in a singular cohort.

An overall summary of the statistical tests are presented in Table 55 and Appendix E and Appendix F.

Table 55

BPS and NELS-Statistical Analysis Results Overall

Source	Statistical test and subgroup	Transfer Status or Baccalaureate attainment	Sig	Results
BPS	Chi-squared - 1st college attended in 1990 through 1994	Transfer status	X	$\chi^2 = 6.084$, $df = 1$, $n = 430$, $p < .05$
	Chi-squared - First and second degree attained (1990-1994)	Degree attained	X	$\chi^2 = 43.336$, $df = 3$, $n = 440$, $p < .05$
	Logistic Regressions - Social backgrounds	Transfer Status - Block 1 - Hybrid		$\chi^2 = 0.790$, $df = 1$, $n = 230$, $p > .05$
		Transfer Status - Block 2 – All IV		$\chi^2 = 7.829$, $df = 8$, $n = 230$, $p > .05$
		Baccalaureate attainment overall - Block 1 - Hybrid	X	$\chi^2 = 12.783$, $df = 1$, $n = 230$, $p < .001$
		Baccalaureate attainment overall - Block 2 – All IV	X	$\chi^2 = 19.986$, $df = 8$, $n = 230$, $p < .05$
	Logistic Regressions - Precollege personal characteristics	Transfer status - Block 1 - Hybrid	X	$\chi^2 = 9.173$, $df = 1$, $n = 350$, $p < .01$
		Transfer status - Block 2 – All IV	X	$\chi^2 = 26.626$, $df = 8$, $n = 350$, $p < .01$
		Baccalaureate attainment overall - Block 1 - Hybrid	X	$\chi^2 = 16.965$, $df = 1$, $n = 350$, $p < .001$
		Baccalaureate attainment overall - Block 2 – All IV	X	$\chi^2 = 63.216$, $df = 8$, $n = 350$, $p < .001$
	Logistic Regressions - External demands as students enter	Transfer status - Block 1 - Hybrid	X	$\chi^2 = 4.984$, $df = 1$, $n = 250$, $p < .05$
		Transfer status - Block 2 – All IV		$\chi^2 = 8.688$, $df = 6$, $n = 250$, $p > .05$
		Baccalaureate attainment overall - Block 1 - Hybrid	X	$\chi^2 = 15.529$, $df = 1$, $n = 250$, $p < .001$
		Baccalaureate attainment overall - Block 2 – All IV	X	$\chi^2 = 28.198$, $df = 6$, $n = 250$, $p < .001$
	Logistic Regressions - Experiences during college	Transfer status - Block 1 - Hybrid		$\chi^2 = 2.717$, $df = 1$, $n = 290$, $p > .05$
		Transfer status - Block 2 – All IV		$\chi^2 = 18.587$, $df = 13$, $n = 290$, $p > .05$
		Baccalaureate attainment overall - Block 1 - Hybrid	X	$\chi^2 = 19.739$, $df = 1$, $n = 290$, $p < .001$
		Baccalaureate attainment overall - Block 2 – All IV	X	$\chi^2 = 51.245$, $df = 13$, $n = 290$, $p < .001$
NELS	Logistic Regressions - Social backgrounds	Baccalaureate attainment overall - Block 1 - Hybrid	X	$\chi^2 = 26.726$, $df = 1$, $n = 580$, $p < .001$
		Baccalaureate attainment overall - Block 2 – All IV	X	$\chi^2 = 106.087$, $df = 6$, $n = 580$, $p < .001$
	Logistic Regressions - Precollege personal characteristics	Baccalaureate attainment overall - Block 1 - Hybrid	X	$\chi^2 = 7.429$, $df = 1$, $n = 440$, $p < .01$
		Baccalaureate attainment overall - Block 2 – All IV	X	$\chi^2 = 56.511$, $df = 7$, $n = 440$, $p < .001$
	Logistic Regressions - External demands as students enter	Baccalaureate attainment overall - Block 1 - Hybrid	X	$\chi^2 = 21.812$, $df = 1$, $n = 480$, $p < .001$
		Baccalaureate attainment overall - Block 2 – All IV	X	$\chi^2 = 66.996$, $df = 5$, $n = 480$, $p < .001$
	Logistic Regressions - Experiences during college	Baccalaureate attainment overall - Block 1 - Hybrid	X	$\chi^2 = 5.272$, $df = 1$, $n = 380$, $p < .05$
		Baccalaureate attainment overall - Block 2 – All IV	X	$\chi^2 = 32.822$, $df = 9$, $n = 380$, $p < .001$

IES publication policy requires all unweighted sample entries to be rounded to the nearest 10.

Chapter 5

This following chapter will provide: (a) an introduction and overview of the study; (b) summary of the findings; (c) implications; (d) limitations; and (e) conclusion. Attendance at two-year and community colleges has grown dramatically over the past 20 years (Boggs, 2008; Horn & Nevill, 2006; Horn et al., 2002; Laanan, 2000; Lundberg, 2002; Provasnik & Planty, 2008). At the same time success rates for those who transfer and baccalaureate attainment rates for students beginning college at two-year campuses has remained stagnant (Alfonso, 2006; Bradburn et al., 2003; Dougherty, 2001). Two-year and community colleges have become the starting place for over a third of all students, including a majority of Black, Hispanic, Native American/Alaskan, and first-generation students (Clements, 2002; Dougherty, 2001; Horn & Nevill, 2006; Horn et al., 2002; Laanan, 2000; Provasnik & Planty, 2008). Yet for those who begin at two-year and community colleges, attrition rates are greater than for those who start at four-year colleges (Bailey, 2005; Bailey, Calcagno et al., 2005; Provasnik & Planty, 2008). Many authors have argued that the pathway to the baccalaureate does not begin with the two-year or community college (Alfonso, 2006; Arbona & Nora, 2007; Hoachlander et al., 2003; Wassmer et al., 2004).

Since the mid 1980s some two-year and community colleges have added baccalaureate degrees while retaining associate's degrees (Cohen, 2002; Floyd, 2005; Floyd & Skolnik, 2005; Furlong, 2005; Glennon, 2005; Walker, 2005). Scant analysis of these newly-minted four-year colleges, also known as hybrid colleges (Floyd & Skolnik, 2005; Lorenzo, 2005), could be found, particularly findings relating to transfer and baccalaureate attainment outcomes, and comparisons between hybrid and two-year colleges (Floyd, 2005).

Overview of this Study

The intent of this study was to compare the effects of beginning at a hybrid college with beginning at a two-year college in relation to transfer rates and baccalaureate attainment. This study is particularly important in light of the low degree completion, transfer, and baccalaureate graduation rates of those who begin at two-year colleges (Clements, 2002; Flowers, 2006; Harvey, 2003; Horn & Nevill, 2006; Horn et al., 2002; Laanan, 2000), the importance of obtaining a baccalaureate degree for the individual and society (Baum et al., 2010; Kuh et al., 2008; Surette, 2001), the disproportionally high number of underrepresented students starting at two-year colleges (Horn & Nevill, 2006; Provasnik & Planty, 2008), and the relatively unstudied phenomenon of hybrid colleges - two-year colleges offering bachelor's degrees while retaining their subbaccalaureate offerings of certificate and associate's degrees (Floyd & Skolnik, 2005; Lorenzo, 2005). Through this exploratory study I have attempted to answer the call to provide additional research on campus transfer and baccalaureate attainment rates for those who begin at two-year colleges (Cohen, 2003; Dougherty & Kienzl, 2006; Dowd & Melguizo, 2008; Lorenzo, 2005; Townsend, 2005) and to provide initial exploratory information about hybrid colleges.

This research also sought to control for social backgrounds, other precollege personal characteristics, external demands as students enter college, and experiences during college that may affect transfer rates and baccalaureate attainment among students found in the BPS and NELS dataset in a similar manner as Dougherty and Kienzl (2006).

Summary of Findings

Research question one. The first research question was: How does beginning at a hybrid college that offers subbaccalaureate and baccalaureate degrees differ from beginning at a two-year college in relation to transfer rates and baccalaureate attainment? I hypothesized that those

who began at hybrid colleges that offered subbaccalaureate and baccalaureate degrees would have lower transfer and higher baccalaureate completion rates than students who start at a two-year college.

Transfer status. Using the BPS dataset the results in this study were mixed in relation to transfer status. Descriptive statistics for this study revealed that 68% of those students who began at two-year colleges (250 of 370) did not transfer through their first degree attained, as compared to 83% of those students who began at hybrid colleges (50 of 60). These results are consistent with the overall results from the BPS study that indicated 57% of students began at two-year institutions and 72% of students who began at four-year institutions did not transfer (McCormick, 1997; NCES, 2008a). A two-by-two chi-squared analysis proved that these differences in transfer status were significant ($p < .05$) for those who started at hybrid versus those who began at two-year colleges. Findings from the chi-squared showed that those who began at hybrid colleges transferred less than those who began at two-year colleges. Studies have shown that students who transferred less often do not face the transfer related difficulties such as structural barriers, cooling of aspirations, transfer shock, becoming readjusted to the academic and social settings of the new college, and ultimately improving baccalaureate attainment.

When I ran the logistic regressions to control for background and student differences, and when testing the transfer status independent variable without the other independent variables, the results were mixed. Whereas transfer status through the first degree attained was significantly different for those who began at hybrid versus those who began at two-year colleges for the groupings of independent variables of precollege personal characteristics ($p < .01$) and external demands as students enter college ($p < .05$), there were no significant differences between the two groupings of social backgrounds ($p > .05$) and experiences during college ($p > .05$). The four

logistic regressions had smaller sample sizes than for the chi-squared analysis (230, 350, 250, and 290 vs. 430) as the logistic regressions automatically eliminated any partial missing data. The smaller sample sizes would make it more difficult to reject a false null hypothesis (Keith, 2006) and thus may explain the differences in statistical significances.

Baccalaureate attainment. Baccalaureate attainment from the examination of both the BPS and NELS dataset results were consistent. Students completed all levels (certificate, associate's, and baccalaureate) at higher percentages at the first college attended when they began at a hybrid (treatment) versus a two-year (control) college. Chi-squared and logistic regression results taken from the BPS dataset and logistic regression results taken from the BPS and NELS dataset confirmed that those who attended a hybrid college had a significantly improved chance of obtaining a baccalaureate degree as compared to those who attended a two-year or community college. Data from the BPS dataset showed that for those attending hybrid colleges 16% earned baccalaureate degrees at that initial hybrid college within four years versus no baccalaureate degrees earned for those who began at two-year colleges, as one would expect.

When I combined the first and second degree attained after starting at a two-year (control) or hybrid (treatment) college in 1990 from the BPS dataset, the descriptive statistics again showed that the latter (hybrid) students earned any degrees (certificate, associate's, and baccalaureate) at higher levels than those who began at two-year colleges by 1994. The chi-squared analysis confirmed that there was a significant difference ($p < .05$) and a positive relationship between obtaining baccalaureate degrees for those who began at hybrid colleges versus those who began at a two-year college.

Descriptive statistics from the BPS dataset confirmed that students who began at hybrid colleges versus two-year colleges earned bachelor's degrees at higher percentages in every

degree pathway to the baccalaureate (attained bachelor's as first degree, attained associate's then bachelor's degree, attained certificate, associate's then bachelor's degree). These findings are similar to those found in literature and within the overall BPS data that showed that for students who began at four-year institutions and did not transfer 63% earned baccalaureate degrees as compared to 45% who transferred from a two-year college (McCormick, 1997).

When running the logistic regressions and testing the overall baccalaureate attainment dependent variable and to control for background and experience differences in the first block of a two block logistic regression without the other independent variables, I found the results to be consistent. All eight of the logistic regressions run from the BPS and NELS datasets when only testing for the first independent variable of first college attended, presented significant and positive differences for those who began at hybrid colleges versus those who began at two-year colleges. Hybrid college attendees' odds of obtaining a baccalaureate degree improved between 2 and 5 times as compared to students who attended a two-year college. The results from each of the databases indicated that the effect size or the strength of or the association between first college attended and obtaining the baccalaureate degree overall was less than is typical (Leech et al., 2008). With a larger effect size stronger conclusions can be drawn about the overall population (Sprinthall, 2003).

The results from running the first block of the logistic regressions, however, did not control for the individual independent variables of background issues, differing demands, or experiences while at college. The remaining research questions attempted to account for these potentially confounding independent variables.

Research question two. The second research question was: Controlling for social background variables (first college attended, race, gender, age, parents' higher education level,

and parents' socioeconomic status - SES), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college? I hypothesized that those students who attended hybrid colleges would transfer less and obtain baccalaureate degrees at a higher rate than those students who began at two-year colleges even after controlling for a number of background variables.

Social background variables. With these variables controlled for (first college attended, race, gender, age, parents' higher education level, and parents' socioeconomic status), the results analyzed from the BPS dataset in relation to transfer demonstrated that there was not a significant difference ($p > .05$) between attending a hybrid versus a two-year college in relation to the social background independent variables for the overall logistic regression model and none of the independent variables were individually significant. These results mean that there were no significant differences in transfer between those who began at a hybrid or two-year college when accounting for these independent variables.

In relation to baccalaureate attainment, however, the results demonstrated that attending hybrid colleges continued to remain significant ($p < .05$) in improving the odds of obtaining a bachelor's degree even after controlling for social background variables. These students were 4 times more likely to obtain their baccalaureate degree than students who attended two-year colleges. The results indicated a small or smaller than typical effect size between all of the social background variables and obtaining the baccalaureate degree (Leech et al., 2008) and therefore caution should be used in drawing conclusions about the overall population (Sprinthall, 2003).

While the entire logistic regression model in relation to the social background variables examined from the BPS dataset was significant in predicting whether students would obtain bachelor's degrees, only the independent variable hybrid college attendance remained significant

($p < .01$). Each of the remaining five independent variables of race, gender, age, parents' higher education level, and parents' socioeconomic status (SES) did not contribute to the significance of the logistic regression model. This result means that if a student started at a hybrid college they would more likely have obtained a baccalaureate degree than if they attended a two-year college regardless of their social backgrounds.

The results taken from the assessment of the NELS dataset in relation to baccalaureate attainment while controlling for the social background variables confirmed that starting at a hybrid college still remained significant ($p < .001$) in improving the odds of obtaining a bachelor's degree. These students were 3 times more likely to obtain their baccalaureate degree than students who attended two-year colleges. The results indicated a small or smaller than typical effect size between all of the social background variables and obtaining the baccalaureate degree (Leech et al., 2008).

The entire logistic regression model in relation to the social background variables was significant in predicting whether students would obtain a bachelor's degree, however the analysis of the NELS, unlike the BPS data, showed that all of the independent variables added to the significance of the logistic regression model. These variables were first college attended – hybrid ($p < .001$) gender ($p < .05$), socioeconomic status ($p < .001$), parents' higher education level ($p < .01$), and race ($p < .01$). In relation to these variables, the literature indicated that social background variables can affect the likelihood of obtaining a baccalaureate degree (Dougherty & Kienzl, 2006; Flowers, 2006; Pascarella & Terenzini, 1991; Strauss & Volkwein, 2004). The results between the BPS and NELS were consistent with each other with similar statistical significances from the overall logistic regression models and most critically that the independent variable of hybrid versus two-year college attendance remained statistically significant when the

other independent variables were added, regardless if the additional independent variables were significant. The other individual independent variable statistical significant differences between BPS and NELS might have been due to smaller sample sizes for the BPS in this study or differences in the datasets. The ability to reject a false null hypothesis for these independent variables is a function of the sample size (Keith, 2006).

Gender. The results from the examination of the BPS study revealed no significant difference ($p > .05$) in obtaining a baccalaureate degree between females and males, but data taken from the NELS dataset demonstrated that being female contributed in a positive manner to the significance of the logistic regression model incorporating the social background variables. Females had a 1.6 times higher likelihood of completing a baccalaureate degree than their male counterparts. This is consistent with findings in the literature showing that a higher percentage of women than men obtain both associate's and baccalaureate degrees (Bradburn et al., 2003; Horn & Nevill, 2006; Horn et al., 2002; Peter & Horn, 2005; Provasnik & Planty, 2008).

Socioeconomic status and income. The results from the analysis of the BPS study showed no significant differences ($p > .05$) in obtaining a baccalaureate degree in relation to family income, but results from the NELS dataset demonstrated that the socioeconomic status composite contributed in a positive manner to the significance of the social background logistic regression model. Those with a higher socioeconomic composite were 2.8 times more likely to complete a baccalaureate degree than their counterparts. These results are similar to studies that found a positive relationship between those with a higher socioeconomic status and both associate's and baccalaureate degree attainment (Bradburn et al., 2003; Cabrera et al., 2001; Cabrera et al., 1992; Tinto, 2008; Whitaker & Pascarella, 1994).

Parents' higher education level—first-generation student status. The results from the analysis of the BPS study confirmed no significant difference ($p > .05$) in obtaining a baccalaureate degree in relation to parents' higher education level for those students whose parents attended some college or more versus first-generation students (see footnote 2, p. 10 defining first-generation). Data taken from the NELS dataset demonstrated that having parents who attended at least some college contributed in a positive manner to the significance of the social background logistic regression model. These students were two times as likely to complete a baccalaureate degree as the first-generation students. The NELS results are consistent with findings in the literature showing that first-generation students are less likely to obtain both associate's and baccalaureate degrees (Chen, 2005; Choy, 2001; Engle & Tinto, 2008; Horn & Nunez, 2000; Lohfink & Paulsen, 2005; U.S. Department of Education, 2001a).

Race. The results from the examination of the BPS study showed no significant differences in obtaining a baccalaureate degree in relation to race, and the NELS dataset only demonstrated a significant difference for Asian or Pacific Islander students who were three times more likely to obtain a baccalaureate degree than White students. The overall results are similar with studies that show that Asian or Pacific Islander are more likely than White students, to obtain bachelor's degrees (Astin, Tsui, & Avalos, 1996; Bowen et al., 2005; Whitaker & Pascarella, 1994; Wirt et al., 2003).

Research question three. The third research question was: Controlling for other precollege personal characteristics (first college attended, high school degree or equivalent, remedial math, remedial reading, remedial study skills, remedial writing, education expectations of a bachelor's degree or higher, and above average academic ability as compared to others), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid

college that offers subbaccalaureate degrees from those who *begin* at a two-year college? I hypothesized that students who attended hybrid colleges would transfer less and obtain baccalaureate degrees at higher rates than those students who began at two-year or community colleges even when the results controlled for a number of other precollege personal characteristics.

Other precollege personal characteristics variables. The results from the review of the BPS dataset in relation to transfer status, when controlled for the other precollege personal characteristics variables (hybrid college attendance, high school degree or equivalent, remedial math, remedial reading, remedial study skills, remedial writing, expectations of a baccalaureate degree, and above average academic ability as compared to others), confirmed that attending a hybrid college still remained significant ($p < .01$) in reducing the odds of transferring. These students were .24 times ($p < .01$) less likely to transfer than students who attended two-year or community colleges. The other significant independent variable in the logistic regression model was having the expectation of obtaining a bachelor's degree ($p < .001$); results demonstrated that these students had 3 times the likelihood of transferring. The overall results indicate a small or smaller than typical effect size between all of the precollege personal characteristics variables and obtaining the baccalaureate degree (Leech et al., 2008) making interpretations for the overall population problematic.

The results taken from an analysis of the BPS dataset in relation to baccalaureate attainment overall, when controlled for the other precollege personal characteristics variables, illustrated that attending a hybrid college still remained significant ($p < .001$) in improving the odds of obtaining a bachelor's degree. Students who began at a hybrid college were 3.4 times more likely ($p < .01$) to obtain their baccalaureate degree than students who attended two-year or

community colleges. The other significant independent variable in the logistic regression model was having a perceived above average academic ability ($p < .01$); results confirmed that these students had 2.7 times the likelihood of obtaining a baccalaureate degree. The results indicated a small or smaller than typical effect size between all of the precollege personal characteristics variables and obtaining the baccalaureate degree (Leech et al., 2008).

The entire logistic regression model in relation to the other precollege personal characteristics variables from the BPS dataset was significant in predicting whether students would obtain a bachelor's degree, however only the two variables of hybrid college attendance and perceived above average academic ability remained significant. Each of the remaining six independent variables did not contribute to the significance of the logistic regression model. These other variables were high school degree or equivalent, remedial math, remedial reading, remedial study skills, remedial writing, and expectations of a baccalaureate degree.

The results taken from an analysis of the NELS dataset in relation to baccalaureate attainment, controlled for the other precollege personal characteristics variables, confirmed that attending a hybrid college still remained significant ($p < .001$) in improving the odds of obtaining a bachelor's degree. Students who began at hybrid colleges were 2.3 times more likely to obtain their baccalaureate degree than students who attended two-year or community colleges. The results signified a small or smaller than typical effect size between all of the other precollege personal characteristics variables and obtaining the baccalaureate degree (Leech et al., 2008).

Data analysis from NELS confirmed that only the independent variables of hybrid college attendance ($p < .01$) and expectations of a baccalaureate ($p < .01$) added to the significance of the logistic regression model. Each of the remaining five independent variables did not contribute to the significance of the logistic regression model. These other variables were centered log10 of

SAT math, centered log10 of SAT verbal, high school degree, remedial English, and remedial math. In relation to these variables, the literature has shown that other precollege personal characteristics variables can affect the likelihood of obtaining a baccalaureate degree (Chevalier et al., 2007; Dougherty & Kienzl, 2006; Hoachlander et al., 2003; Provasnik & Planty, 2008).

Perceived above average academic ability. Examination of the BPS study illustrated that those students who perceived themselves as having above average academic ability obtained baccalaureates at a higher rate, or this variable contributed in a positive manner to the significance ($p < .01$) of the other precollege personal characteristics logistic regression model. The NELS dataset did not have a comparable variable. These students were 2.7 times more likely to complete a baccalaureate degree than students who did not feel they had above average academic ability. These results are consistent with the findings in literature showing that those who have higher perceived academic ability have greater academic success with performance and persistence (Chemers et al., 2001; Chevalier et al., 2007; Multon et al., 1991).

Expectations of obtaining a baccalaureate. The results from the examination of the BPS study confirmed a significant difference ($p < .001$) in transferring in relation to the independent variable of expectations of obtaining a baccalaureate degree. The students who had this expectation were 3 times more likely to transfer than their counterparts. Students who began at a two-year college and had this expectation would be required to transfer to obtain this degree.

The analysis of the results from the BPS study demonstrated no significant difference in obtaining a baccalaureate degree in relation to independent variable of expectations of obtaining a baccalaureate degree. The results from the NELS dataset confirmed that having this expectation contributed more than any other variable in this study in a positive manner to the significance ($p < .01$) of the other precollege personal characteristics logistic regression model.

These students were 23 times more likely to complete a baccalaureate degree than students who did not have this expectation. These results are consistent with the findings in the literature showing that those who have baccalaureate expectations are more likely to obtain that degree (Choy, 2001; Dougherty & Kienzl, 2006; Hoachlander et al., 2003; Pascarella et al., 1998; Provasnik & Planty, 2008).

Research question four. The fourth research question was: Controlling for external demands as students enter college (first college attended, married, children, single parent, and work categories), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college? I hypothesized that students who attended hybrid colleges would transfer less and obtain baccalaureate degrees at higher rates than those students who began at two-year or community colleges even when the results controlled for a number of external demands as students enter college.

External demands as students enter college variables. There were no significant differences ($p > .05$) in the results examined from the BPS dataset between beginning at hybrid and two-year colleges in relation to transfer status. In relation to baccalaureate attainment however, when controlling for the external demands as students enter college variables (marital status, children, single parent and hours worked), the results indicated that attending a hybrid college still remained significant ($p < .001$) in improving the odds of obtaining a bachelor's degree overall. Students who began at hybrid colleges were 3.9 times more likely ($p < .001$) to obtain their baccalaureate degree overall than students who attended two-year or community colleges. The results specified a small or smaller than typical effect size between all of the

external demands as students enter college variables and obtaining the baccalaureate degree (Leech et al., 2008).

The entire logistic regression model in relation to the external demands as students enter college variables from the BPS dataset was significant in predicting whether students obtained a bachelor's degree overall, however only the independent variable hybrid college attendance remained significant. Each of the remaining four independent variables did not contribute to the significance of the logistic regression model and is likely due to the smaller sample sizes of the BPS. These variables were married/separated, children, single parent, and working hours.

The results examined from the NELS dataset in relation to baccalaureate attainment overall, controlled for external demands as students enter college variables, illustrated that attending a hybrid college still remained significant ($p < .001$) in improving the odds of obtaining a bachelor's degree overall. These students were 3.8 times more likely ($p < .001$) to obtain their baccalaureate degree than students who attended two-year or community colleges. The results point to a small or smaller than typical effect size between all of the external demands as students enter college variables and obtaining the baccalaureate degree (Leech et al., 2008).

Data reviewed from the NELS dataset confirmed that the independent variables of hybrid college attendance, dependent children, and working added to the significance of the external demands as students enter college logistic regression model, however not being married did not contribute. In relation to these variables, the literature confirmed that external demands as students enter college variables can affect the likelihood of obtaining a baccalaureate degree as described below.

No dependent children. The results from the examination of the BPS study demonstrated no significant difference in obtaining a baccalaureate degree overall in relation to not having children, but from the NELS dataset, not having dependent children contributed in a positive manner to the significance ($p < .05$) of the external demands as students enter college logistic regression model. These students were 6.3 times more likely to complete a baccalaureate degree overall as compared to those who did have children. These results are consistent with the findings in the literature showing that those who do not have children are more likely to obtain both associate's and baccalaureate degrees (Dougherty & Kienzl, 2006; Surette, 2001; Taniguchi & Kaufman, 2007; Terenzini et al., 1995).

Hours worked. The results from the review of the BPS study indicated no significant difference in obtaining a baccalaureate degree overall in relation to hours worked. The results from the NELS dataset showed that working less contributed in a positive manner to the significance ($p < .05$) of the external demands as students enter college logistic regression model. Students who worked 21 to 39, and more than 40 hours were .5 and .28 times, respectively, less likely to complete a baccalaureate than those who worked 1 to 20 hours. These results are consistent with findings in the literature showing that those who do not work, or who work a minimum amount of hours while in school, are more likely to graduate (Berkner et al., 1996; Choy, 2001; Dougherty, 2001; Dougherty & Kienzl, 2006; Wirt et al., 2003).

Research question five. The fifth research question was: Controlling for experiences during college (first college attended, students attendance status, whether major was academic or vocational, GPA – A's and B's, academic integration, and social integration), how does transfer status and baccalaureate attainment differ between those who *begin* at a hybrid college that offers subbaccalaureate degrees from those who *begin* at a two-year college? I hypothesized that

students who attended hybrid colleges would transfer less and obtain baccalaureate degrees at higher rates than those students who began at two-year or community colleges even when the results controlled for a number of experiences during college.

Experiences during college variables. There were no significant differences ($p > .05$) in the results analyzed from the BPS dataset between beginning at a hybrid and at a two-year college in relation to transfer status. In relation to baccalaureate attainment overall, however, the results taken from the BPS dataset, when controlling for the experiences during college variables[17], demonstrated that attending a hybrid college still remained significant ($p < .001$) in improving the odds of obtaining a bachelor's degree overall. These students were 4.4 times more likely ($p < .001$) to obtain their baccalaureate degree than students who attended two-year or community colleges. The results indicated a small or smaller than typical effect size between all of the experiences during college variables and obtaining the baccalaureate degree (Leech et al., 2008).

The entire logistic regression model in relation to the experiences during college variables from the BPS dataset was significant in predicting whether students would obtained a bachelor's degree, however only three of the variables added to the overall significance of the logistic regression model. The variables that remained significant were hybrid college attendance ($p < .001$), full-time students attendance status ($p < .01$), and students receiving mostly grades of

[17] Attendance status, vocational or technical courses, GPA, and a number of academic and social engagement variables: met advisor concerning academic plans, talked with faculty about academic matters, attended career-related lectures, in study groups with other students, contact with faculty outside class, participated in school clubs, went places with friends from school, in student assistance centers/programs, and participated in intramural activities.

A's and B's ($p < .05$). Each of the remaining 10 independent variables did not contribute to the significance of the logistic regression model. These variables were as follows: major was vocational, met advisor concerning academic plans, talked with faculty about academic matters, attended career-related lectures, in study groups with other students, contact with faculty outside class, participated in school clubs, went places with friends from school, in student assistance centers/programs, and participated in intramural activities.

The results examined from the NELS dataset in relation to baccalaureate attainment overall, controlled for the experiences during college variables, confirmed that attending a hybrid college still remained significant ($p < .001$) in improving the odds of obtaining a bachelor's degree. Students who began at hybrid colleges were 2 times more likely to obtain their baccalaureate degree than students who attended two-year or community colleges. The results indicated a small or smaller than typical effect size between all of the experiences during college variables and obtaining the baccalaureate degree (Leech et al., 2008).

Data analyzed from NELS dataset confirmed that the independent variables of hybrid college attendance ($p < .05$), full-time enrollment ($p < .05$), and taking vocational/technical courses ($p < .01$) added to the significance of the experiences during college logistic regression model. Each of the remaining six independent variables did not contribute to the significance of the logistic regression model. These variables were student government/politics, social clubs-fraternities/sororities, varsity intercollegiate athletics, other intercollegiate athletics, intramural athletics, volunteer with other students. In relation to these variables, the literature as described below indicates that experiences during college variables can affect the likelihood of obtaining a baccalaureate degree.

Full-time student attendance status. The results from both the BPS and NELS study confirmed a significant difference (BPS – $p < .01$ and NELS – $p < .05$) in obtaining a baccalaureate degree overall in relation to full-time student attendance status, which contributed in a positive manner to the significance of the experiences during college logistic regression model from both datasets. This was the only independent variable in the entire study that was significant from both the BPS and NELS databases besides hybrid college attendance. These students were 4.6 and 3.5 times, respectively, more likely to complete a baccalaureate degree than those who attended part-time. These results are consistent with the findings in the literature showing that those who attend college full-time are more likely to obtain both associate's and baccalaureate degrees at higher percentages than those who attend part-time (Adelman, 1999, 2007; Chen, 2005; Choy, 2001; Dougherty & Kienzl, 2006; Hoachlander et al., 2003; Horn & Nevill, 2006; Horn et al., 2002; Lohfink & Paulsen, 2005; Provasnik & Planty, 2008).

Grade point averages of A's and B's. The results from the examination of the BPS study proved a significant difference ($p < .05$) in obtaining a baccalaureate degree overall and contributed to the experiences during college logistic regression model in relation to obtaining grade point averages of mostly A's and B's as compared to obtaining C's, D's, and F's. Students who received A's and B's were 2.1 times more likely to complete a baccalaureate degree than those who obtained C's, D's, and F's. There was not a comparable variable from the NELS dataset. These results are consistent with the findings in the literature showing that those who obtain higher grades while in school are more likely to graduate (Adelman, 2006; Barlow & Villarejo, 2004; Chen, 2005; Dougherty, 2001; Geiser & Santelices, 2007; Kuh et al., 2008; Strauss & Volkwein, 2004; Volkwein, Valle, Parmley, Blose, & Zhou, 2000).

Vocational or technical courses at any school. The results from examining the BPS study illustrated no significant difference in obtaining a baccalaureate degree overall in relation to taking vocational or technical courses as compared to academic courses. Results taken from the NELS dataset showed that taking vocational or technical courses contributed in a negative manner to the significance ($p < .01$) of the experiences during college logistic regression model. These students were .29 times less likely to complete a baccalaureate degree overall than those who took academic courses. These results are consistent with findings in the literature showing that those who take vocational or technical courses are less likely to obtain both associate's and baccalaureate degrees (Brint & Karabel, 1989; Dougherty, 2001; Dougherty & Kienzl, 2006; Glennon, 2005; Hoachlander et al., 2003).

Overall analysis of study findings. The initial chi-squared results explained that students who begin at hybrid colleges significantly transferred less than students who begin at two-year colleges however, when social background, other precollege personal characteristics, external demands as students enter college, and experiences during college were factored in, the transfer results from the analysis of the BPS dataset were less clear. For students who started at hybrid colleges, transfer status only remained significantly different for students attending hybrid versus two-year colleges when factoring in the other precollege personal characteristics independent variables. The other precollege personal characteristic grouping however is critical to transfer as it included and controlled for student expectations of obtaining a baccalaureate degree. This independent variable was fundamental in determining the differences between those attending hybrid and two-year colleges because students' degree goals can be dramatically different when they begin college. Without the precollege desire to obtain a baccalaureate degree transfer is required less to obtain that degree. When controlling for the other three groupings of

social backgrounds, external demands as student enter college, and experiences during college, the statistical differences between the students who began at hybrid versus two-year colleges disappeared. These inconsistent results between the chi squared and logistic regression outcomes may be due to the transfer outcomes being similar between those who begin at two-year and hybrid colleges or possibly it is due to the small sample sizes used in relation to the BPS study.

Each of the 17 chi-squared or logistic regressions results run from the BPS and the NELS dataset in relation to all the independent variables indicated significantly improved baccalaureate degree attainment whether from the perspective of first and second degree attained, overall degree progression, or even controlling for the sociodemographic independent variable groupings of social backgrounds, other precollege personal characteristics, external demands as students enter college, and experiences during college for those who began at a hybrid college versus those who started at a two-year or community college. These results provided preliminary evidence for the need for further investigation in examining the influence of hybrid colleges on student transfer patterns and baccalaureate attainment.

Implications

I sought, in this dissertation to understand if there was a decreased likelihood of transferring and an increased likelihood of obtaining a bachelor's degree for those students who attended a hybrid college versus a two-year or community college, while controlling for potentially confounding background and experiential differences. The results of this exploratory study suggests the importance of additional research relating to two-year and community colleges, providing foundational information to build on because of the potentially promising results of reduced transfer and increased baccalaureate attainment for students who began at hybrid versus two-year colleges. The results suggest something is happening to positively set

norms of success and persistence if students start at hybrid versus two-year colleges. More research is warranted to understand why and if the influences of starting at hybrids potentially only at the beginning, have incremental impacts such as Riordan's study (1994) in relation to attending Women's only colleges. Riordan showed that the incremental effect of each year of persistence at women-only colleges suggests that the educational climate conditions at the women-only colleges exerted some measure of continued success for each year students attended college. These incremental effects may be relevant and similar to hybrid colleges and deserves further study.

With additional research, two-year campuses might have a rationale for expanding degree offerings to include the baccalaureate degree and therefore encourage students to stay at the two-year campus to finish their bachelor degrees. This approach might help increase low baccalaureate completion rates for those who begin at two-year colleges.

Implications for future research. This study was conducted with a small sample size due to the relative newness of historically two-year colleges offering baccalaureate degrees, however this analysis could be re-run utilizing BPS and NELS weights and flags, potentially generalizing the results (Dougherty & Kienzl, 2006; NCES, 2008a, 2008b). This approach would strengthen the conclusions by making the study generalizable, and provide deeper insights into the hybrid colleges. It might then be possible for me to collapse the four background and experiential models into one model for both the BPS and NELS dataset as each student case in the sample would represent numerous students from the total population of the United States (Kazdin, 2003). I recommend with caution that future quantitative analyses use the Education Longitudinal Study of 2002 (ELS:2002) (NCES, 2010) which will be available sometime after 2014. Longitudinal datasets can be problematic as constructs can be questionable in the way they

are operationalized and it is recommended that careful attention is given to academic and social engagement variables.

It could be instructive to compare hybrid college students who are admitted into associate's degree programs to similar two-year or community college students while controlling for program of study or major. Utilizing a similar matrix of independent variables but adding this variable may provide further insight into hybrid colleges because it would help control for another aspect in student experiences during college and provide further insight into transfer and baccalaureate attainment differences.

A deeper understanding of hybrid colleges could be gained by analyzing the NELS transcript files. In this way researchers may be able to find similar data from NELS that was found in the BPS dataset by segmenting hybrid college attendees who transferred out after their first college attended, and thus compare the transfer outcomes of the control and treatment groups. In addition to gaining further insight into patterns of transfer, this type of analysis could further clarify the results of this study by providing additional transfer results to compare the BPS transfer results to. The NELS transcript files may also provide a deeper understanding of the differences in student academic performance and baccalaureate attainment by providing additional independent variables to examine.

One might compare students with baccalaureate aspirations who started out at hybrid colleges in an associate's degree program and who obtained their baccalaureate degree at that same hybrid college with those who started out in a baccalaureate degree program at a traditional four-year college. Understanding if there are differences between hybrid and four-year college baccalaureate graduates in relation to grade point averages, time to degree, student costs,

academic/social engagement, post graduate studies, post-college employment, and post-college incomes to name a few areas may also shed light on the relative effectiveness of hybrid colleges.

Selecting a small number of hybrid colleges and creating a case study analysis might provide a specific context to aid in the understanding of this hybrid initiative. Case studies can provide a deeper understanding of an explicit subject (Kazdin, 2003) and may be instructive in developing further analysis. Additionally, a qualitative line of inquiry could be explored where one would investigate experiences and motivations of hybrid college students in associate degree programs who aspire to the baccalaureate.

Utilizing two national longitudinal databases - BPS that followed several cohorts of students who entered college for the first time regardless of age, and NELS that tracked eighth graders starting in the spring of 1988, was challenging to keep the scope of this dissertation manageable as some of the independent variables were not found in both datasets. Building this research project from the framework of Dougherty and Kienzl's (2006) study on two-year college transfer and baccalaureate attainment assisted tremendously utilizing the same dependent and mostly the same independent variables, adding the hybrid college focus, and ultimately having the results from two databases provided a much broader perspective as a foundational study.

Limitations

A critical limitation of this study was the limited nature of the sample size for both datasets as a result of data being drawn from the early stages of hybrid colleges. The decision to draw students from the 60 treatment colleges that were identified limited the ability to run one large regression model with all of the background and involvement variables included together. For this study it was necessary to break the regressions into four subsets of groupings for each

database to meet the minimum logistic regression requirements of 20 cases per each independent variable (Leech et al., 2008). Although the results were clear that hybrid college attendance as the first college attended was significant in each of the groupings in relation to baccalaureate degree attainment overall, until all of the independent variables are run together these results should be interpreted with caution (Kazdin, 2003; Keith, 2006; Leech et al., 2008).

For each of the two databases, and the four subsections of social backgrounds, other precollege personal characteristics, external demands as students enter college, and experiences during college, the models were generally better able to predict those who would not receive a baccalaureate degree than those who would, which might indicate that there could be other possible, more accurate, variables that influence bachelor's attainment. These prediction results could also have been caused by the limited sample size, which required the regressions to be broken down into the four autonomous subsections.

Because of the limited sample size from the treatment group, some of the independent variables produced raw number results that were very small—particularly the results showing the effect of the following independent variables on the dependent variable from the BPS dataset; high school degree or equivalent, expectations of a baccalaureate, marital status, children, single parent, and from the NELS study in relation to high school degree. With a larger sample size or by using the weights and flags might have changed the independent variable significances.

The differences between the BPS chi-squared results and the logistic regressions run on transfer status appear to be related to the smaller sample size for the logistic regression (230 vs. 430), and possibly due to controlling for the independent variables for the social background variables (Leech et al., 2008; Sprinthall, 2003), because the ability to reject a false null

hypothesis is a function of the sample size (Keith, 2006).These differences should be further understood.

I began this study by investigating the impact of hybrid college attendance on transfer status and baccalaureate attainment overall, however I was only able to study the issue of transfer using the BPS dataset. After refining and reviewing the transcript files withheld in the NELS dataset, one might be able to address this dependent variable of transfer using both databases, thus giving you a broader perspective on transfer.

Finally, there were clear differences in the independent variable significance results between the BPS and NELS datasets. Possibly it was because of the basic differences between the studies in that the BPS dataset focused on first-time college beginners of all ages, and the NELS dataset tracked eighth graders through their college tenure who were of similar age. These differences in independent variable results between the BPS and NELS could also be related to the smaller sample sizes within the BPS results as the ability to reject a false null hypothesis is a function of the sample size (Keith, 2006). This issue remains a limitation of this study.

Conclusion

Through this study I sought to gain a deeper understanding of the hybrid college movement in which historically two-year colleges have added baccalaureate degrees while retaining their sub-baccalaureate missions. I used restricted data from the NCES, particularly from the Beginning Postsecondary Students Longitudinal Study and the National Education Longitudinal Study, to determine whether attending a hybrid college decreased the likelihood of transferring and improved the likelihood of baccalaureate attainment overall as compared to attending a two-year college. Students who attended hybrid colleges were significantly less likely to transfer (with mixed results between the chi-squared and logistic regressions), had a

significantly higher likelihood of attaining baccalaureate degrees when combining the first and second degree attained, and had a significantly higher likelihood of obtaining a baccalaureate degree overall—even with the results controlled for a number of potentially confounding background and experiential factors— than students who attended two-year colleges. These results provided initial indication for the need for additional examination of the influence of hybrid colleges on student transfer patterns and baccalaureate attainment.

Appendix A: Treatment Group Colleges

UNITID	NAME	CITY	ST
102553	University of Alaska Anchorage	Anchorage	AK
112446	Coleman College	La Mesa	CA
119173	Mount St. Mary's College	Los Angeles	CA
127556	Mesa State College	Grand Junction	CO
131399	University of the District of Columbia	Washington	DC
131098	Wesley College	Dover	DE
136206	Northwood University-Florida Education Center	West Palm Beach	FL
137032	Saint Leo University	St Leo	FL
139311	Clayton College and State University	Morrow	GA
141644	Hawaii Pacific University	Honolulu	HI
142328	Lewis-Clark State College	Lewiston	ID
146393	Kendall College	Chicago	IL
151333	Indiana University-Kokomo	Kokomo	IN
151360	Indiana University-Northwest	Gary	IN
151102	Indiana University-Purdue University-Fort Wayne	Fort Wayne	IN
151111	Indiana University-Purdue University-Indianapolis	Indianapolis	IN
152248	Purdue University-Calumet Campus	Hammond	IN
152266	Purdue University-North Central Campus	Westville	IN
159966	Nicholls State University	Thibodaux	LA
167792	Simons Rock College of Bard	Great Barrington	MA
168227	Wentworth Institute of Technology	Boston	MA
161217	University of Maine at Augusta	Augusta	ME
168847	Baker College of Flint	Flint	MI
171298	Baker College of Muskegon	Muskegon	MI
168838	Baker College of Owosso	Owosso	MI
169479	Davenport University	Grand Rapids	MI
169910	Ferris State University	Big Rapids	MI
171492	Northwood University	Midland	MI
177065	Columbia College	Columbia	MO
177214	Drury University	Springfield	MO
178341	Missouri Southern State University	Joplin	MO
180522	Montana State University-Northern	Havre	MT
183257	Granite State College	Concord	NH
187046	Thomas Edison State College	Trenton	NJ
189413	Boricua College	New York	NY
190558	CUNY College of Staten Island	Staten Island	NY
190646	CUNY Medgar Evers College	Brooklyn	NY
190655	CUNY New York City College of Technology	Brooklyn	NY
196680	Excelsior College	Albany	NY

196042	Farmingdale State University of New York	Farmingdale	NY
191126	Fashion Institute of Technology	New York	NY
196033	SUNY College of Agric and Tech at Cobleskill	Cobleskill	NY
196264	SUNY Empire State College	Saratoga Springs	NY
196592	Touro College	New York	NY
188340	Vaughn College of Aeronautics and Technology	Flushing	NY
201867	Cincinnati College of Mortuary Science	Cincinnati	OH
205443	Shawnee State University	Portsmouth	OH
205203	University of Rio Grande	Rio Grande	OH
206914	Cameron University	Lawton	OK
212832	Gwynedd Mercy College	Gwynedd Valley	PA
243133	University of Puerto Rico-Bayamon	Bayamon	PR
243179	University of Puerto Rico-Humacao	Humacao	PR
243212	University of Puerto Rico-Ponce	Ponce	PR
217235	Johnson and Wales University	Providence	RI
217305	New England Institute of Technology	Warwick	RI
220631	Lincoln Memorial University	Harrogate	TN
221661	Southern Adventist University	Collegedale	TN
227243	Northwood University	Cedar Hill	TX
230782	Weber State University	Ogden	UT
237215	Bluefield State College	Bluefield	WV

Appendix B: Eliminated Treatment Group Colleges

UNITID	NAME
160038	Northwestern State University of Louisiana
142276	Idaho State University
157447	Northern Kentucky University
151306	University of Southern Indiana
206084	University of Toledo
134130	University of Florida
128498	Albertus Magnus College
200800	University of Akron Main Campus
151342	Indiana University-South Bend
193016	Mercy College-Main Campus
142115	Boise State University
183211	Rivier College
152336	University of Saint Francis-Ft Wayne
117636	Loma Linda University
219471	University of South Dakota
195003	Rochester Institute of Technology
156082	Washburn University
106485	University of Arkansas at Monticello
159717	McNeese State University
206695	Youngstown State University
157951	Western Kentucky University
152099	Oakland City University
102614	University of Alaska Fairbanks
193654	The New School
195809	St. John’s University-New York
201885	University of Cincinnati-Main Campus
129525	University of Hartford
106245	University of Arkansas at Little Rock
238430	Cardinal Stritch University
219602	Austin Peay State University
156620	Eastern Kentucky University
183026	Southern New Hampshire University
157386	Morehead State University
171456	Northern Michigan University
229780	Wayland Baptist University
207865	Southwestern Oklahoma State University
151324	Indiana State University
151379	Indiana University-Southeast
188304	Western New Mexico University

139658	Emory University
197708	Yeshiva University
243780	Purdue University-Main Campus
102368	Troy University
198136	Campbell University Inc.
106458	Arkansas State University-Main Campus
134097	Florida State University
167358	Northeastern University
156125	Wichita State University
151290	Indiana Institute of Technology
183044	University of New Hampshire-Main Campus
136172	University of North Florida
204024	Miami University-Oxford
190600	CUNY John Jay College Criminal Justice
150136	Ball State University
193900	New York University
138354	The University of West Florida
137351	University of South Florida
132903	University of Central Florida
163204	University of Maryland-University College
160612	Southeastern Louisiana University
213987	Mercyhurst College
204796	Ohio State University-Main Campus
199193	North Carolina State University at Raleigh
217776	Southern Wesleyan University
141486	Chaminade University of Honolulu
151801	Indiana Wesleyan University
131469	George Washington University
155399	Kansas State University
180489	The University of Montana

Appendix C: Control Group Colleges

UNITID	NAME	CITY	ST
100760	Central Alabama Community College	Alexander City	AL
101028	Chattahoochee Valley Community College	Phenix City	AL
101505	Jefferson State Community College	Birmingham	AL
101602	Lurleen B. Wallace Community College	Andalusia	AL
101897	Northeast Alabama Community College	Rainsville	AL
101736	Northwest Shoals Community College-Muscle Shoals	Muscle Shoals	AL
102067	Shelton State Community College	Tuscaloosa	AL
107327	Arkansas Northeastern College	Blytheville	AR
106883	East Arkansas Community College	Forrest City	AR
106980	National Park Community College	Hot Springs	AR
107460	North Arkansas College	Harrison	AR
107619	Phillips Community College-University of Arkansas	Helena	AR
108092	University of Arkansas at Fort Smith	Fort Smith	AR
104160	Arizona Western College	Yuma	AZ
104425	Cochise College	Douglas	AZ
104577	Eastern Arizona College	Thatcher	AZ
105145	Gateway Community College	Phoenix	AZ
105154	Mesa Community College	Mesa	AZ
364016	Paradise Valley Community College	Phoenix	AZ
105428	Phoenix College	Phoenix	AZ
105525	Pima Community College	Tucson	AZ
105747	Scottsdale Community College	Scottsdale	AZ
106148	Yavapai College	Prescott	AZ
109208	American River College	Sacramento	CA
109819	Bakersfield College	Bakersfield	CA
109907	Barstow College	Barstow	CA
110246	Butte College	Oroville	CA
111896	Cerro Coso Community College	Ridgecrest	CA
112190	City College of San Francisco	San Francisco	CA
112385	Coastline Community College	Fountain Valley	CA
123484	College of the Siskiyous	Weed	CA
112686	Compton Community College	Compton	CA
113096	Cosumnes River College	Sacramento	CA
113111	Crafton Hills College	Yucaipa	CA
114266	Evergreen Valley College	San Jose	CA
114789	Fresno City College	Fresno	CA
114938	Gavilan College	Gilroy	CA
115490	Heald College-San Jose	Milpitas	CA
117247	Laney College	Oakland	CA

366401	Las Positas College	Livermore	CA
117274	Lassen Community College	Susanville	CA
117645	Long Beach City College	Long Beach	CA
117788	Los Angeles City College	Los Angeles	CA
117706	Los Angeles Pierce College	Woodland Hills	CA
117715	Los Angeles Southwest College	Los Angeles	CA
117724	Los Angeles Trade Technical College	Los Angeles	CA
117733	Los Angeles Valley College	Valley Glen	CA
118684	Mendocino College	Ukiah	CA
118772	Merritt College	Oakland	CA
118976	Modesto Junior College	Modesto	CA
122180	Sacramento City College	Sacramento	CA
122339	San Diego City College	San Diego	CA
122375	San Diego Mesa College	San Diego	CA
122384	San Diego Miramar College	San Diego	CA
122658	San Joaquin Delta College	Stockton	CA
122746	San Jose City College	San Jose	CA
121619	Santa Ana College	Santa Ana	CA
125462	West Hills Community College	Coalinga	CA
126863	Community College of Aurora	Aurora	CO
126942	Community College of Denver	Denver	CO
127820	Pikes Peak Community College	Colorado Springs	CO
127909	Red Rocks Community College	Lakewood	CO
128258	Trinidad State Junior College	Trinidad	CO
128577	Asnuntuck Community College	Enfield	CT
129367	Capital Community College	Hartford	CT
130396	Gateway Community College	New Haven	CT
129543	Housatonic Community College	Bridgeport	CT
129695	Manchester Community College	Manchester	CT
129756	Middlesex Community College	Middletown	CT
129729	Naugatuck Valley Community College	Waterbury	CT
130040	Northwestern Connecticut Community College	Winsted	CT
130004	Norwalk Community College	Norwalk	CT
129808	Three Rivers Community College	Norwich	CT
130606	Tunxis Community College	Farmington	CT
130891	Delaware Technical and Community College-Owens	Georgetown	DE
130916	Delaware Technical and Community College-Stanton	Newark	DE
130907	Delaware Technical and Community College-Terry	Dover	DE
132709	Broward Community College	Fort Lauderdale	FL
133809	Florida College	Temple Terrace	FL
133702	Florida Community College at Jacksonville	Jacksonville	FL
133960	Florida Keys Community College	Key West	FL

134495	Hillsborough Community College	Tampa	FL
135717	Miami Dade College	Miami	FL
136145	North Florida Community College	Madison	FL
136473	Pensacola Junior College	Pensacola	FL
137759	Tallahassee Community College	Tallahassee	FL
138187	Valencia Community College	Orlando	FL
138901	Atlanta Metropolitan College	Atlanta	GA
139250	Coastal Georgia Community College	Brunswick	GA
139904	Georgia Military College-Main Campus	Milledgeville	GA
141361	Young Harris College	Young Harris	GA
141468	Heald College-Honolulu	Honolulu	HI
141680	Honolulu Community College	Honolulu	HI
141839	Maui Community College	Kahului	HI
141990	Windward Community College	Kaneohe	HI
152822	Aib College of Business	Des Moines	IA
153214	Des Moines Area Community College	Ankeny	IA
153311	Eastern Iowa Community College District	Davenport	IA
153445	Hawkeye Community College	Waterloo	IA
153524	Iowa Central Community College	Ft Dodge	IA
153630	Iowa Western Community College	Council Bluffs	IA
153737	Kirkwood Community College	Cedar Rapids	IA
153922	Marshalltown Community College	Marshalltown	IA
154059	North Iowa Area Community College	Mason City	IA
154396	Southwestern Community College	Creston	IA
154572	Western Iowa Tech Community College	Sioux City	IA
143279	Black Hawk College	Moline	IL
143613	Carl Sandburg College	Galesburg	IL
144209	City Colleges of Chicago-Harold Washington College	Chicago	IL
144184	City Colleges of Chicago-Harry S Truman College	Chicago	IL
144157	City Colleges of Chicago-Kennedy-King College	Chicago	IL
144166	City Colleges of Chicago-Malcolm X College	Chicago	IL
144175	City Colleges of Chicago-Olive-Harvey College	Chicago	IL
144193	City Colleges of Chicago-Richard J. Daley College	Chicago	IL
144218	City Colleges of Chicago-Wilbur Wright College	Chicago	IL
144564	Danville Area Community College	Danville	IL
144944	Elgin Community College	Elgin	IL
145521	Highland Community College	Freeport	IL
145682	Illinois Central College	East Peoria	IL
146278	John Wood Community College	Quincy	IL
146296	Joliet Junior College	Joliet	IL
146348	Kankakee Community College	Kankakee	IL
146418	Kishwaukee College	Malta	IL

146603	Lewis and Clark Community College	Godfrey	IL
146676	Lincoln College	Lincoln	IL
146685	Lincoln Land Community College	Springfield	IL
147916	Parkland College	Champaign	IL
148292	Richland Community College	Decatur	IL
148380	Rock Valley College	Rockford	IL
148876	Saint Augustine College	Chicago	IL
148672	Sauk Valley Community College	Dixon	IL
143215	Southwestern Illinois College	Belleville	IL
148991	Spoon River College	Canton	IL
150987	Ivy Tech State College-Central Indiana	Indianapolis	IN
151005	Ivy Tech State College-East Central	Muncie	IN
151014	Ivy Tech State College-Kokomo	Kokomo	IN
151023	Ivy Tech State College-Lafayette	Lafayette	IN
150978	Ivy Tech State College-North Central	South Bend	IN
151032	Ivy Tech State College-Northeast	Fort Wayne	IN
151087	Ivy Tech State College-Northwest	Gary	IN
151041	Ivy Tech State College-South Central	Sellersburg	IN
151050	Ivy Tech State College-Southwest	Evansville	IN
151069	Ivy Tech State College-Wabash Valley	Terre Haute	IN
154642	Allen County Community College	Iola	KS
154925	Coffeyville Community College and Area Technical	Coffeyville	KS
154998	Dodge City Community College	Dodge City	KS
155140	Haskell Indian Nations University	Lawrence	KS
155177	Hesston College	Hesston	KS
155292	Kansas City Kansas Community College	Kansas City	KS
155566	Neosho County Community College	Chanute	KS
155858	Seward County Community College	Liberal	KS
156231	Ashland Community and Technical College	Ashland	KY
157553	Big Sandy Community and Technical College	Prestonsburg	KY
156851	Henderson Community College	Henderson	KY
156860	Hopkinsville Community College	Hopkinsville	KY
157331	Maysville Community College	Maysville	KY
247940	Owensboro Community and Technical College	Owensboro	KY
158662	Delgado Community College	New Orleans	LA
159382	Louisiana State University at Alexandria	Alexandria	LA
164775	Berkshire Community College	Pittsfield	MA
165033	Bristol Community College	Fall River	MA
165112	Bunker Hill Community College	Boston	MA
165194	Cape Cod Community College	West Barnstable	MA
165574	Dean College	Franklin	MA
165802	Fisher College	Boston	MA

165981	Greenfield Community College	Greenfield	MA
166133	Holyoke Community College	Holyoke	MA
166647	Massachusetts Bay Community College	Wellesley Hills	MA
166823	Massasoit Community College	Brockton	MA
166957	Mount Wachusett Community College	Gardner	MA
167312	North Shore Community College	Danvers	MA
167376	Northern Essex Community College	Haverhill	MA
167525	Quincy College	Quincy	MA
167534	Quinsigamond Community College	Worcester	MA
167631	Roxbury Community College	Roxbury Crossing	MA
167905	Springfield Technical Community College	Springfield	MA
161688	Allegany College of Maryland	Cumberland	MD
161767	Anne Arundel Community College	Arnold	MD
161864	Baltimore City Community College	Baltimore	MD
161882	Baltimore International College	Baltimore	MD
162168	Chesapeake College	Wye Mills	MD
162122	College of Southern Maryland	La Plata	MD
162557	Frederick Community College	Frederick	MD
162690	Hagerstown Community College	Hagerstown	MD
162706	Harford Community College	Bel Air	MD
162779	Howard Community College	Columbia	MD
163426	Montgomery College	Rockville	MD
163657	Prince Georges Community College	Largo	MD
161138	Eastern Maine Community College	Bangor	ME
161192	Kennebec Valley Community College	Fairfield	ME
161484	Northern Maine Technical College	Presque Isle	ME
161545	Southern Maine Community College	South Portland	ME
168607	Alpena Community College	Alpena	MI
168883	Bay de Noc Community College	Escanaba	MI
169521	Delta College	University Center	MI
169974	Glen Oaks Community College	Centreville	MI
169992	Gogebic Community College	Ironwood	MI
170055	Grand Rapids Community College	Grand Rapids	MI
170240	Henry Ford Community College	Dearborn	MI
170444	Jackson Community College	Jackson	MI
170541	Kalamazoo Valley Community College	Kalamazoo	MI
170550	Kellogg Community College	Battle Creek	MI
170620	Lake Michigan College	Benton Harbor	MI
170657	Lansing Community College	Lansing	MI
171155	Mid Michigan Community College	Harrison	MI
171234	Montcalm Community College	Sidney	MI
169275	Mott Community College	Flint	MI

171304	Muskegon Community College	Muskegon	MI
171395	North Central Michigan College	Petoskey	MI
172307	Southwestern Michigan College	Dowagiac	MI
172291	St. Clair County Community College	Port Huron	MI
172617	Washtenaw Community College	Ann Arbor	MI
172635	Wayne County Community College District	Detroit	MI
172671	West Shore Community College	Scottville	MI
173142	Bethany Lutheran College	Mankato	MN
175227	Dunwoody College of Technology	Minneapolis	MN
173735	Hibbing Community College	Hibbing	MN
173799	Inver Hills Community College	Inver Grove Heights	MN
173805	Itasca Community College	Grand Rapids	MN
174136	Minneapolis Community and Technical College	Minneapolis	MN
174473	Northland Community and Technical College	Thief River Falls	MN
173063	Riverland Community College	Austin	MN
174738	Rochester Community and Technical College	Rochester	MN
175157	Vermilion Community College	Ely	MN
177117	Cottey College	Nevada	MO
177135	Crowder College	Neosho	MO
177250	East Central College	Union	MO
177977	Linn State Technical College	Linn	MO
178785	Penn Valley Community College	Kansas City	MO
178891	Ranken Technical College	St. Louis	MO
179308	Saint Louis Community College-Forest Park	St. Louis	MO
262031	St. Charles Community College	St. Peters	MO
179539	State Fair Community College	Sedalia	MO
175519	Coahoma Community College	Clarksdale	MS
180197	Flathead Valley Community College	Kalispell	MT
197966	Beaufort County Community College	Washington	NC
198118	Caldwell Community College and Technical Institute	Hudson	NC
198260	Central Piedmont Community College	Charlotte	NC
197814	College of the Albemarle	Elizabeth City	NC
198376	Davidson County Community College	Lexington	NC
198640	Halifax Community College	Weldon	NC
198668	Haywood Community College	Clyde	NC
198710	Isothermal Community College	Spindale	NC
198729	James Sprunt Community College	Kenansville	NC
198774	Johnston Community College	Smithfield	NC
198817	Lenoir Community College	Kinston	NC
198987	Mitchell Community College	Statesville	NC
199087	Nash Community College	Rocky Mount	NC
199421	Randolph Community College	Asheboro	NC

199485	Rockingham Community College	Wentworth	NC
199494	Rowan-Cabarrus Community College	Salisbury	NC
199625	Sampson Community College	Clinton	NC
199722	Southeastern Community College	Whiteville	NC
199731	Southwestern Community College	Sylva	NC
199926	Wilkes Community College	Wilkesboro	NC
199953	Wilson Technical Community College	Wilson	NC
200192	Lake Region State College	Devils Lake	ND
200314	Minot State University-Bottineau Campus	Bottineau	ND
200341	Williston State College	Williston	ND
180902	Central Community College	Grand Island	NE
181303	Metropolitan Community College Area	Omaha	NE
181640	Southeast Community College Area	Lincoln	NE
181817	Western Nebraska Community College	Scottsbluff	NE
183132	New Hampshire Comm Tech Coll-Manchester/Strat	Stratham	NH
183099	New Hampshire Technical Institute	Concord	NH
183141	NH Community Technical College-Nashua-Claremont	Nashua	NH
183655	Atlantic Cape Community College	Mays Landing	NJ
183743	Bergen Community College	Paramus	NJ
183859	Brookdale Community College	Lincroft	NJ
183877	Burlington County College	Pemberton	NJ
183938	Camden County College	Blackwood	NJ
184180	County College of Morris	Randolph	NJ
184205	Cumberland County College	Vineland	NJ
184481	Essex County College	Newark	NJ
184791	Gloucester County College	Sewell	NJ
184995	Hudson County Community College	Jersey City	NJ
185509	Mercer County Community College	West Windsor	NJ
185536	Middlesex County College	Edison	NJ
185873	Ocean County College	Toms River	NJ
186034	Passaic County Community College	Paterson	NJ
186645	Raritan Valley Community College	Somerville	NJ
187198	Union County College	Cranford	NJ
187532	Albuquerque Technical Vocational Institute	Albuquerque	NM
187639	Clovis Community College	Clovis	NM
187666	Eastern New Mexico University-Roswell Campus	Roswell	NM
187903	New Mexico Junior College	Hobbs	NM
187620	New Mexico State University-Dona Ana	Las Cruces	NM
188058	Northern New Mexico College	Espanola	NM
188100	San Juan College	Farmington	NM
182500	Truckee Meadows Community College	Reno	NV
188438	Adirondack Community College	Queensbury	NY

189547	Broome Community College	Binghamton	NY
189839	Cayuga County Community College	Auburn	NY
190053	Clinton Community College	Plattsburgh	NY
190169	Columbia-Greene Community College	Hudson	NY
190442	Corning Community College	Corning	NY
190521	CUNY Borough of Manhattan Community College	New York	NY
190530	CUNY Bronx Community College	Bronx	NY
190585	CUNY Hostos Community College	Bronx	NY
190619	CUNY Kingsborough Community College	Brooklyn	NY
190628	CUNY La Guardia Community College	Long Island City	NY
190673	CUNY Queensborough Community College	Bayside	NY
190840	Dutchess Community College	Poughkeepsie	NY
191199	Finger Lakes Community College	Canandaigua	NY
191302	Fulton-Montgomery Community College	Johnstown	NY
191339	Genesee Community College	Batavia	NY
191612	Herkimer County Community College	Herkimer	NY
191719	Hudson Valley Community College	Troy	NY
191986	Jamestown Community College	Jamestown	NY
192022	Jefferson Community College	Watertown	NY
192785	Maria College of Albany	Albany	NY
193283	Mohawk Valley Community College-Utica Branch	Utica	NY
193326	Monroe Community College	Rochester	NY
196051	Morrisville State College	Morrisville	NY
193478	Nassau Community College	Garden City	NY
193946	Niagara County Community College	Sanborn	NY
194028	North Country Community College	Saranac Lake	NY
194222	Onondaga Community College	Syracuse	NY
194240	Orange County Community College	Middletown	NY
194392	Paul Smiths College of Arts and Science	Paul Smiths	NY
195058	Rockland Community College	Suffern	NY
195322	Schenectady County Community College	Schenectady	NY
195988	Sullivan County Community College	Loch Sheldrake	NY
196015	SUNY College of Technology at Canton	Canton	NY
196024	SUNY College of Technology at Delhi	Delhi	NY
197294	SUNY Westchester Community College	Valhalla	NY
196565	Tompkins-Cortland Community College	Dryden	NY
196653	Trocaire College	Buffalo	NY
196699	Ulster County Community College	Stone Ridge	NY
201283	Belmont Technical College	St. Clairsville	OH
201928	Cincinnati State Technical and Community College	Cincinnati	OH
202222	Columbus State Community College	Columbus	OH
202356	Cuyahoga Community College District	Cleveland	OH

202648	Edison State Community College	Piqua	OH
203678	James A Rhodes State College	Lima	OH
203331	Jefferson Community College	Steubenville	OH
203474	Kent State University-Trumbull Campus	Warren	OH
203483	Kent State University-Tuscarawas Regional Campus	New Philadelphia	OH
203748	Lorain County Community College	Elyria	OH
203881	Marion Technical College	Marion	OH
204422	North Central State College	Mansfield	OH
204440	Northwest State Community College	Archbold	OH
204662	Ohio State University Agricultural Technical Inst	Wooster	OH
204820	Ohio University-Chillicothe Branch	Chillicothe	OH
204945	Owens Community College	Perrysburg	OH
205470	Sinclair Community College	Dayton	OH
205966	Southern State Community College	Hillsboro	OH
205841	Stark State College of Technology	Canton	OH
204486	University of Northwestern Ohio	Lima	OH
206446	Washington State Community College	Marietta	OH
204255	Zane State College	Zanesville	OH
206923	Carl Albert State College	Poteau	OK
206996	Connors State College	Warner	OK
207050	Eastern Oklahoma State College	Wilburton	OK
207236	Murray State College	Tishomingo	OK
207449	Oklahoma City Community College	Oklahoma City	OK
207397	Oklahoma State University-Oklahoma City	Oklahoma City	OK
207661	Rogers State University	Claremore	OK
207935	Tulsa Community College	Tulsa	OK
208035	Western Oklahoma State College	Altus	OK
208275	Blue Mountain Community College	Pendleton	OR
208318	Central Oregon Community College	Bend	OR
208390	Chemeketa Community College	Salem	OR
209038	Lane Community College	Eugene	OR
209746	Portland Community College	Portland	OR
210270	Umpqua Community College	Roseburg	OR
211307	Bucks County Community College	Newtown	PA
211343	Butler County Community College	Butler	PA
210605	Community College of Allegheny County	Pittsburgh	PA
211079	Community College of Beaver County	Monaca	PA
215239	Community College of Philadelphia	Philadelphia	PA
211927	Delaware County Community College	Media	PA
212869	Harcum College	Bryn Mawr	PA
212878	Harrisburg Area Community College-Harrisburg	Harrisburg	PA
213233	Johnson College	Scranton	PA

213303	Keystone College	La Plume	PA
213376	Lackawanna College	Scranton	PA
213525	Lehigh Carbon Community College	Schnecksville	PA
213659	Luzerne County Community College	Nanticoke	PA
214111	Montgomery County Community College	Blue Bell	PA
214379	Northampton County Area Community College	Bethlehem	PA
214883	Peirce College	Philadelphia	PA
215381	Pittsburgh Institute of Aeronautics	West Mifflin	PA
216825	Westmoreland County Community College	Youngwood	PA
241720	Colegio Universitario de San Juan	San Juan	PR
217475	Community College of Rhode Island	Warwick	RI
217615	Aiken Technical College	Aiken	SC
218821	Spartanburg Methodist College	Spartanburg	SC
219879	Cleveland State Community College	Cleveland	TN
221184	Nashville State Technical Community College	Nashville	TN
221485	Southwest Tennessee Community College	Memphis	TN
222822	Angelina College	Lufkin	TX
222992	Austin Community College	Austin	TX
223506	Brazosport College	Lake Jackson	TX
223816	Central Texas College	Killeen	TX
223898	Cisco Junior College	Cisco	TX
223320	Coastal Bend College	Beeville	TX
226408	College of the Mainland	Texas City	TX
224350	Del Mar College	Corpus Christi	TX
224615	El Centro College	Dallas	TX
224642	El Paso Community College	El Paso	TX
224961	Galveston College	Galveston	TX
225070	Grayson County College	Denison	TX
225423	Houston Community College System	Houston	TX
225520	Howard County Junior College District	Big Spring	TX
226116	Lamar State College-Port Arthur	Port Arthur	TX
227182	North Harris Montgomery Community College Distr	The Woodlands	TX
227225	Northeast Texas Community College	Mount Pleasant	TX
246354	Palo Alto College	San Antonio	TX
227401	Paris Junior College	Paris	TX
227766	Richland College	Dallas	TX
228316	Southwest Texas Junior College	Uvalde	TX
227854	St. Philips College	San Antonio	TX
228547	Tarrant County College District	Fort Worth	TX
228608	Temple College	Temple	TX
228699	Texarkana College	Texarkana	TX
229319	Texas State Technical College-Harlingen	Harlingen	TX

229328	Texas State Technical College-West Texas	Sweetwater	TX
229504	Vernon College	Vernon	TX
229799	Weatherford College	Weatherford	TX
230171	Dixie State College of Utah	St George	UT
230418	Latter Day Saints Business College	Salt Lake City	UT
230746	Salt Lake Community College	Salt Lake City	UT
231697	Central Virginia Community College	Lynchburg	VA
231873	Dabney S Lancaster Community College	Clifton Forge	VA
231882	Danville Community College	Danville	VA
233019	Patrick Henry Community College	Martinsville	VA
233116	Piedmont Virginia Community College	Charlottesville	VA
233338	Richard Bland College - College of William and Mary	Petersburg	VA
233639	Southside Virginia Community College	Alberta	VA
233772	Tidewater Community College	Norfolk	VA
233903	Virginia Highlands Community College	Abingdon	VA
230861	Community College of Vermont	Waterbury	VT
234669	Bellevue Community College	Bellevue	WA
234696	Bellingham Technical College	Bellingham	WA
234933	Clark College	Vancouver	WA
234979	Columbia Basin College	Pasco	WA
235149	Everett Community College	Everett	WA
236188	Olympic College	Bremerton	WA
236513	Seattle Community College-Central Campus	Seattle	WA
236072	Seattle Community College-North Campus	Seattle	WA
236504	Seattle Community College-South Campus	Seattle	WA
236610	Shoreline Community College	Shoreline	WA
236656	South Puget Sound Community College	Olympia	WA
236692	Spokane Community College	Spokane	WA
236708	Spokane Falls Community College	Spokane	WA
236753	Tacoma Community College	Tacoma	WA
236887	Walla Walla Community College	Walla Walla	WA
237039	Whatcom Community College	Bellingham	WA
237109	Yakima Valley Community College	Yakima	WA
238397	Blackhawk Technical College	Janesville	WI
240116	Chippewa Valley Technical College	Eau Claire	WI
238722	Fox Valley Technical College	Appleton	WI
238759	Gateway Technical College	Kenosha	WI
238263	Madison Area Technical College	Madison	WI
239248	Milwaukee Area Technical College	Milwaukee	WI
239460	Northcentral Technical College	Wausau	WI
239488	Northeast Wisconsin Technical College	Green Bay	WI
239910	Southwest Wisconsin Technical College	Fennimore	WI

240055	University of Wisconsin Colleges	Madison	WI
240170	Western Wisconsin Technical College	La Crosse	WI
237701	Potomac State College of West Virginia University	Keyser	WV
237817	Southern W. Virginia Community and Technical Coll	Mt Gay	WV
238014	West Virginia Northern Community College	Wheeling	WV
240505	Casper College	Casper	WY
240514	Central Wyoming College	Riverton	WY
240596	Eastern Wyoming College	Torrington	WY
240666	Sheridan College	Sheridan	WY
240693	Western Wyoming Community College	Rock Springs	WY

Appendix D: The Restricted Use Databases

I accessed the NCES restricted data for both BPS and NELS using a built-in software program called the Electronic Codebook (ECB). The ECB provided a searchable listing of variables, variable descriptions, frequencies, percentages, and codes to generate data. This tool generated SPSS/SAS syntax code, which after extensive editing extracted selected variable data for SPSS, SAS, or another database.

Within each of the two main files of BPS and NELS were metafiles of data that corresponded to each wave or focus of the subsets of data. For the BPS:94 dataset the ECB search extracted from the following internal files: BPSALPHA, B92ALPHA, JOBINFO, N90AWD, N90PAR, N90SJB, N90SSH, N90STM, N90STU, PRINCJOB, SCHINFO, STUDENT, and TERMINFO. The prefix and suffix of each file indicated when the data were captured and what the focus of the instrument was. These were the suffix codes: AWD = award/budget file, SSH = student school file, STM = student term file, SJB = student job file, PAR = parent file, and STU = student file.

For the NELS dataset the ECB search extracted from the following files: BYF4STU, ALPHA, NSLDS, PSEF3F4, INSTF3F4, and PSE1994. The nomenclature also represents when and where the data came from. The data were collected in five waves: (BY) the base-year study in 1988; (F1) the first follow-up study, called NELS:88/90; (F2) the second follow-up study, called NELS:88/92; (F3) the third follow-up study, called NELS:88/94; and (F4) the fourth follow-up study, called NELS:88/2000. The NSLDS file provides a linkage via the student social security number to the U.S. Department of Education's National Student Loan Data System. The PSE titled files relate to the student postsecondary data, and the INST files relate to the postsecondary institution-level data.

Appendix E: Significant Independent Variables Relating to Transfer Status

Variable	B	S.E.	Wald	df	p	Exp(B)
BPS Dataset						
Other precollege personal characteristic variables						
1st college attended—treatment	-1.432	.499	8.224	1	.004	.239**
Expectations of BA degree	1.101	.314	12.326	1	.000	3.008***
Constant	-2.426	.960	6.388	1	.011	.088
External demands as students enter college variables						
1st college attended—treatment	-.827	.373	4.907	1	.027	.437*
Constant	-.793	.455	3.034	1	.082	.452

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

Appendix F: Significant Independent Variables Relating to Baccalaureate Attainment

Variable	B	S.E.	Wald	df	p	Exp(B)
BPS Dataset						
Social background variables						
1st college attended—treatment	1.383	.417	11.033	1	.001	3.989**
Constant	-21.553	8596.462	.000	1	.998	.000
Other precollege personal characteristic variables						
1st college attended—treatment	1.237	.395	9.819	1	.002	3.446**
Above average academic ability	.984	.345	8.119	1	.004	2.675**
Constant	-42.468	8738.196	.000	1	.996	.000
External demands as students enter college variables						
1st college attended—treatment	1.353	.371	13.313	1	.000	3.869***
Constant	-3.685	1.126	10.722	1	.001	.025**
Experiences during college variables						
1st college attended—treatment	1.473	.404	13.261	1	.000	4.362***
# Students attendance status—FT	1.520	.501	9.223	1	.002	4.572**
GPA A's and B's	.731	.358	4.167	1	.041	2.076*
Constant	-3.371	.755	19.957	1	.000	.034***
NELS Dataset						
Social background variables						
1st college attended—treatment	1.230	.298	17.017	1	.000	3.420***
+ Gender—female	.444	.183	5.911	1	.015	1.559*
Socioeconomic status composite	1.045	.146	51.274	1	.000	2.843***
Race—White			10.672	3	.014	**
—Black, not Hispanic	-.639	.459	1.937	1	.164	.528
—Hispanic or Latino	-.021	.269	.006	1	.939	.980
+ Race—Asian or Pacific Islander	1.207	.421	8.210	1	.004	3.344**
Constant	-.937	.152	37.834	1	.000	.392***
Other precollege characteristics variables						
1st college attended—treatment	.849	.302	7.885	1	.005	2.337**
+ Expectations of a BA—yes	3.142	1.030	9.313	1	.002	23.151**
Constant	-5.764	1.519	14.395	1	.000	.003***
External demands as students enter college variables						
1st college attended—treatment	1.337	.338	15.648	1	.000	3.807***
+ Dependent children—no	1.839	.763	5.816	1	.016	6.293*
+ Hours worked—1–20 hours			20.680	2	.000	***
+ Hours worked—21–39 hours	-.593	.233	6.458	1	.011	.553*
+ Hours worked—more than 40 hours	-1.277	.290	19.352	1	.000	.279***
Constant	-3.199	.903	12.544	1	.000	.041***
Experiences during college variables						
1st college attended—treatment	.698	.319	4.789	1	.029	2.010*
# Enrollment—FT	1.253	.534	5.501	1	.019	3.501*
+ Vocational/tech courses at any school	-1.255	.480	6.830	1	.009	.285**
Constant	-1.386	.523	7.028	1	.008	.250**

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

Variable significant in both databases, + Variable significant in one database but not other

Appendix G: Definition of Terms

College origins	The location of where a student starts college can be related to whether or not they succeed as retention and graduation outcomes differ based on the selectivity and type of college (McPherson & Schapiro, 1999; Provasnik & Planty, 2008; Stephan et al., 2009).
Cooling-out process	The lowering of lifetime educational degree expectations prior to and during college for those who begin at a two-year college (Cabrera & La Nasa, 2000a; Clark, 1980; Hellmich, 1993; Pascarella et al., 1998; Pierson et al., 2003)
First-generation college student	Are those who are the first to attend college from their family (Chen, 2005; Choy, 2001; Horn & Nunez, 2000; Lohfink & Paulsen, 2005; Nunez & Cuccaro-Alamin, 1998; U.S. Department of Education, 2001a)
Hybrid college	Two-year and community colleges that have become baccalaureate granting colleges while retaining their subbaccalaureate mission of offering associate degrees and certificates

	(Floyd, 2005; Lorenzo, 2005)
Junior college	A branch campus or university center that is controlled by the university, a state junior college controlled by state boards, a district junior college controlled by the district or county, and local colleges with little or no governmental controlling authority (Lorenzo, 2005)
Ladder curriculum	A colloquial term meaning that students are able to start with a certificate program, stay for an associate degree, then go on to pursue a baccalaureate (Kent, 2008)
Subbaccalaureate	Associate degrees and certificates (Dougherty, 1991)
Student institutional commitment	Student contentment with their college, impression, campus fit, opinion of college quality, and appeal (Braxton et al., 2000; Nora & Cabrera, 1993; Sandler, 2000; Tinto, 1993; Volkwein et al., 2000)
Swirling, double dipping, and coenrollment	Are used to describe the nontraditional or nonlinear path of serially transferring from one college to the next, or attending two

	institutions at the same time, on the pathway to the baccalaureate degree for both two-year and four-year students (Bontrager et al., 2005; Borden, 2004; de los Santos & Wright, 1990; Townsend, 2001)
Transfer shock	An experience of disruption that causes a significant decline in grade point average after a student transfers from a two-year to a four-year college (Flaga, 2002; Ishitani, 2008)
University center	A formal collaboration between a community college and one or more four-year colleges to offer the baccalaureate on that particular community college campus (Lorenzo, 2005)

Appendix H: IRB Approval

SYRACUSE UNIVERSITY
Institutional Review Board
MEMORANDUM

TO: Catherine Engstrom
DATE: February 27, 2012
SUBJECT: **Determination of Exemption from Regulations**
IRB #: 12-046
TITLE: *Obtaining the Baccalaureate via an Associate Degree: Two-Year or Four-Year Campus that Offers Sub-Baccalaureate Degrees*

The above referenced application, submitted for consideration as exempt from federal regulations as defined in 45 C.F.R. 46, has been evaluated by the Institutional Review Board (IRB) for the following:

1. determination that it falls within the one or more of the five exempt categories allowed by the organization;
2. determination that the research meets the organization's ethical standards.

It has been determined by the IRB this protocol qualifies for exemption and is assigned to category **4**. This authorization will remain active for a period of five years from **February 24, 2012** until **February 23, 2017**.

CHANGES TO PROTOCOL: Proposed changes to this protocol during the period for which IRB authorization has already been given, cannot be initiated without additional IRB review. If there is a change in your research, you should notify the IRB immediately to determine whether your research protocol continues to qualify for exemption or if submission of an expedited or full board IRB protocol is required. Information about the University's human participants protection program can be found at: http://orip.syr.edu/human-research/human-research-irb.html Protocol changes are requested on an amendment application available on the IRB web site; please reference your IRB number and attach any documents that are being amended.

STUDY COMPLETION: The completion of a study must be reported to the IRB within 14 days.

Thank you for your cooperation in our shared efforts to assure that the rights and welfare of people participating in research are protected.

Tracy Cromp, M.S.W.
Director

Note to Faculty Advisor: This notice is only mailed to faculty. If a student is conducting this study, please forward this information to the student researcher.
DEPT: Higher Education, 350 Huntington Hall **STUDENT:** David Gerlach

Office of Research Integrity and Protections
121 Bowne Hall Syracuse, New York 13244-1200
(Phone) 315.443.3013 ♦ (Fax) 315.443.9889
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Appendix I: Beginning Postsecondary Students Longitudinal Study: Methodology Report

(U.S. Department of Education, 2002)

Chapter 2
Design and Method

A. Sampling Design

1. Respondent Universe

The respondent universe for the BPS:1996/2001 full-scale study consisted of all students who began their postsecondary education for the first time during the 1995–96 academic year at any postsecondary institution in the United States or Puerto Rico. The sample students were the first-time beginning students (FTBs) who attended postsecondary institutions eligible for inclusion in NPSAS:96 and who were themselves NPSAS-eligible.

a. Institution Universe

Consistent with previous NPSAS studies, institutions eligible for NPSAS:96 and, consequently, eligible for the BPS:96 cohort, were those that satisfied all of the following conditions for the 1995–96 academic year:

- offered an educational program designed for persons who have completed secondary education;
- offered more than just correspondence courses;
- offered at least one academically, occupationally, or vocationally oriented program of study requiring at least 3 months or 300 contact hours of instruction;
- offered courses that were open to the general public (i.e., not just to specific populations such as prison inmates or members of the organization offering the courses); and
- were located in the United States or Puerto Rico.

U.S. service academies were excluded from participation because of their atypical funding and tuition base. Also ineligible were institutions offering only avocational, recreational remedial, or correspondence courses; institutions not open to the public; hospitals offering only internships or residency programs; institutions offering only noncredit continuing education units (CEUs); schools whose only purpose was to prepare students to take a particular examination (e.g., CPA or Bar exams); institutions offering only programs of study which required less than 3 months or 300 contact hours of instruction; and branch campuses of U.S. institutions in foreign countries.

b. Student Universe

Students eligible for the BPS:96 cohort were those students eligible for NPSAS:96 who were FTBs at NPSAS sample institutions during the 1995–96 academic year (except those who were deceased). NPSAS:96-eligible students were enrolled in NPSAS-eligible institutions during the 1995–96 academic year *and* satisfied *all* of the following eligibility requirements:

- were enrolled in a term or course that began between May 1, 1995, and April 30, 1996;[1]
- were enrolled in either (a) an academic program; (b) at least one course for credit that could be applied toward fulfilling the requirements for an academic degree; *or* (c) an occupational or vocational program that required at least 3 months or 300 clock hours of instruction to receive a degree, certificate, or other formal award;
- were *not* concurrently enrolled in high school; and
- were *not* enrolled *solely* in a GED or other high school completion program.

The NPSAS-eligible students who had never enrolled in a postsecondary institution after completing high school were considered "pure" FTBs and were, of course, eligible for the BPS:96 cohort. However, those NPSAS-eligible students who had enrolled for at least one course after completing high school but had never completed a postsecondary course before the 1995–96 academic year were considered "effective" FTBs and were also eligible for the BPS:96 cohort.

2. Statistical Methodology

The NPSAS:96 sampling design was a two-stage design in which eligible institutions were selected at the first stage and eligible students were selected at the second stage within eligible, responding sample institutions. The NPSAS:96 sample, the process of identifying and selecting FTBs for the BPS follow-up studies, and the BPS:1996/2001 subsampling procedures are described below.

a. NPSAS:96 Institution Sample

The institution-level sampling frame for NPSAS:96 was constructed from the 1993–94 Integrated Postsecondary Education Data System (IPEDS) Institutional Characteristics (IC) file[2].

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[1] This full year of enrollment is the operational survey population. The ideal target population consists of the terms in the 1995–96 financial aid award year, those beginning between July 1, 1995, and June 30, 1996. The survey year is slightly shifted from the ideal year to allow more timely data collection and dissemination of results.

[2] The 1993–94 IPEDS IC file was the latest version available at the time of NPSAS:96 institutional sampling.

The following sets of records that did not correspond to institutions eligible for NPSAS:96 were deleted:

- administrative units (SECTOR=0);
- U.S. Service academies (OBEREG = 00);
- U.S. Territories, except Puerto Rico (OBEREG = 09 and STABBR not 'PR');
- institutions that offer no programs of at least 300 contact hours, 6 semester or trimester hours, or 12 quarter hours *and* for which the highest level of offering was a certificate or diploma of less than 1 academic year (PG300 = 2 and HLOFFER ≤ 1);
- institutions offering only correspondence courses (UNITID=249928, 137379, 367644, and 385363);[3] and
- 12 institutions with reported real (not imputed) zero enrollment (based on unduplicated head counts) for the 1992–93 academic year.[4]

These edits resulted in a sampling frame consisting of 9,468 institutions that appeared to be eligible for NPSAS:96 based on their 1993–94 IPEDS IC data.

Sample institutions were selected for NPSAS:96 with probabilities proportional to composite measures of size based on overall sampling rates by type of institution and type of student. The overall institution sample sizes and sampling rates are shown in **table 2.1** for each of the nine institutional sampling strata. The expected frequency of selection exceeded unity (1.00) for some institutions because of their relatively large enrollment within their stratum. These institutions were included in the sample with certainty. The numbers of certainty and noncertainty institutions selected are shown for each stratum in **table 2.2**.

Within each of the nine institutional strata, additional implicit stratification was accomplished by sorting the sampling frame for each stratum in a serpentine manner [5] by the following variables:

- institutional level;
- the Office of Business Economics (OBE) Region (from the IPEDS IC file) with Alaska and Hawaii moved to Region 9 with Puerto Rico; and
- the institution measure of size.

[3] These were identified by calling the institutions. The calls resulted from searching for "corr" in the name of the institution and from checking discrepant/outlier enrollment data.

[4] Unduplicated head count data are collected for the academic year prior to the one in which the IPEDS data collection is conducted.

[5] Williams, R.L., and Chromy, J.R. (1980). "SAS Sample Selection MACROs." *Proceedings of the Fifth Annual SAS Users Group International Conference*, 392-396.

Table 2.1.—Institution sampling rates by institutional stratum

Institutional stratum	Size of universe[1]	Sample size[2]	Sampling rate
Total	9,468	973	0.10
Public less-than-2-year	273	39	0.14
Public 2-year	1,265	165	0.13
Public 4-year non-doctorate-granting	376	125	0.33
Public 4-year doctorate-granting	243	124	0.51
Private not-for-profit less-than-4-year	902	56	0.06
Private not-for-profit 4-year non-doctorate-granting	1,306	120	0.09
Private not-for-profit 4-year doctorate-granting	681	143	0.21
Private for-profit less-than-2-year	3,516	120	0.03
Private for-profit 2-year or more	906	81	0.09

[1]Based on the 1993–94 IPEDS IC file.
[2]Inflated to account for ineligible and nonresponding sample institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Longitudinal Study:1996/2001 (BPS:1996/2001).

Table 2.2.—Number of certainty and noncertainty institutions by institutional stratum

Institutional stratum	Sample institutions			Number participating	
	Total	Certainty	Non-certainty	In NPSAS:96[1]	With FTBs[2]
Total	973	131	842	836	788
Public less-than-2-year	39	10	29	31	30
Public 2-year	165	7	158	159	156
Public 4-year non-doctorate-granting	125	14	111	119	114
Public 4-year doctorate-granting	124	29	95	125	120
Private not-for-profit less-than-4-year	56	6	50	42	36
Private not-for-profit 4-year non-doctorate-granting	120	2	118	102	98
Private not-for-profit 4-year doctorate-granting	143	54	89	130	114
Private for-profit less-than-2-year	120	2	118	61	59
Private for-profit 2-year or more	81	7	74	67	61

[1]Institution classifications used here were verified by the institutions to correct classification errors on the sampling frame.
[2]Some NPSAS:96 institutions had no FTB students.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Longitudinal Study:1996/2001 (BPS:1996/2001).

The objectives of this additional, implicit stratification were to ensure proportionate representation of institutions by level for the two strata that include institutions at two levels; to ensure proportionate representation of all geographic regions; and to ensure proportionate representation of small institutions.

The effect of the implicit geographic stratification is seen in **table 2.3**, which shows that the geographic distribution of the sample is comparable to that of the survey population (the eligible institutions in the 1993–94 file).

Table 2.3.—Distribution of NPSAS:96 sample by region

Region	Sample institutions		IPEDS universe	
	Number	Percent	Number	Percent
Total	973	100.0	9,468	100.0
1. New England	62	6.4	542	5.7
2. Mid East	181	18.6	1,557	16.4
3. Great Lakes	150	15.4	1,486	15.7
4. Plains	70	7.2	801	8.5
5. Southeast	194	19.9	2,105	22.2
6. Southwest	89	9.1	878	9.3
7. Rocky Mountains	34	3.5	322	3.4
8. Far West	170	17.5	1,622	17.1
9. Outlying Areas	23	2.4	155	1.6

Legend:
1 = CT, ME, MA, NH, RI, VT
2 = DE, DC, MD, NJ, NY, PA
3 = IL, IN, MI, OH, WI
4 = IA, KS, MN, MO, NE, ND, SD
5 = AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV
6 = AZ, NM, OK, TX
7 = CO, ID, MT, UT, WY
8 = AK, CA, HI, NV, OR, WA
9 = PR

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Longitudinal Study:1996/2001 (BPS:1996/2001).

b. NPSAS:96 Student Sample

Each sample institution was asked to provide a database or hard-copy list of all its NPSAS-eligible students enrolled during the NPSAS year. Students were sampled on a flow basis as the student files and lists were received. Machine-readable lists were unduplicated by student ID number prior to sample selection. Stratified systematic sampling was used to facilitate sampling from both hard-copy and machine-readable lists. For each institution, the student sampling rates, rather than the student sample sizes, were held constant (fixed) for the following reasons:

- to facilitate sampling students on a flow basis as student lists were received;
- to facilitate the procedures used to "unduplicate" the sample selected from duplicated hard-copy lists; and
- because sampling at a fixed rate based on the overall stratum sampling rate and the institutional probabilities of selection results in approximately equal overall probabilities of selection within the ultimate student strata.

For each sample institution, the student sampling rates were determined for each of four student sampling strata:

- potential FTBs,
- other undergraduate students,
- first professional students, and
- other graduate students.

The institutions were asked to specify the student level (undergraduate, first professional, or other graduate student) based on the student's last term of enrollment during the NPSAS year. Furthermore, they were asked to identify their undergraduate students whose *first* term of enrollment at the institution was during the NPSAS year, who were freshman or first-year students at that time, and who did not have any transfer credits from another postsecondary institution. Those students were classified as the potential FTBs. The sampling rates depended on the overall population sampling rates for the four types of students, the probability of selecting the institution, and a requirement for a minimum of 40 sample students per institution whenever possible.

NPSAS:96 data collection consisted of computer-assisted data entry (CADE) from records maintained by the institutions (e.g., at the financial aid or registrar's office) for all sample students as well as computer-assisted telephone interviews (CATI) with sample students. Unfortunately, a sample student's FTB status could not be determined until the student's CATI interview had been completed. Therefore, potential FTBs were oversampled in NPSAS in an attempt to yield a sufficient number of BPS-eligible sample members. A total of 12,410 cases were identified as either pure or effective FTBs and thus were eligible for the BPS:96 cohort.

c. BPS:1996/2001 Sample

Of the 12,400 eligible for the BPS:96 cohort, 10,300 completed the BPS:96/98 interview and were verified to be FTBs. The BPS:1996/2001 sample consisted of these BPS:96/98 respondents plus almost 1,800 NPSAS:96 respondents (BPS:96/98 nonrespondents) who were verified to be FTBs. Excluding those cases identified as deceased since their last interview, almost 12,100 sample members eligible for BPS:1996/2001.

To contain costs for the full-scale study, the eligible BPS:96/98 nonrespondents were subsampled. A sample of BPS:96/98 nonrespondents with probabilities proportional to their initial weights was selected. Of these cases, a stratified random subsample was selected to include at the beginning of data collection. The remaining cases were reserved for possible fielding at a later date if necessary and not cost-prohibitive, but ultimately were not included in the BPS:1996/2001 sample. The details of this sampling are described below.

The first step entailed defining three nonrespondent subsampling strata based on whether the parent postcard was returned and whether the sample member either matched to the Central Processing System (CPS) database or Telematch produced a good telephone number. It was expected that sample members whose parents returned the postcard were most likely to be located and interviewed. Those whose parents did not return the postcard but who matched to CPS or Telematch were assumed to be somewhat less likely to be located and interviewed. Sample members whose parents did not return the postcard and who did not match to CPS or Telematch were assumed to be least likely to be found and interviewed. These three sampling strata were then subdivided based on institutional strata because FTBs were sampled at different rates at different types of institutions. Preliminary analyses showed that without this subdivision of the sampling strata, the unequal weighting design effects for institutional analysis strata become unacceptably large. A sample allocation was chosen that maximized the unweighted response rates and those rates were then scaled to achieve the desired sample sizes. The sampling strata and sampling rates, are shown in **table 2.4**.

Table 2.4.—Sampling rates for BPS:96/98 nonrespondents

Stratum	Mail/merge result	Institutional stratum	Sampling rate
Total			
1	Parent postcard returned	1 or 2	0.423
2		3	0.265
3		4	0.198
4		5 or 6	0.312
5		7	0.365
6		8 or 9	0.388
7	Matched CPS or Telematch	1 or 2	0.140
8		3	0.066
9		4	0.053
10		5	0.193
11		6	0.083
12		7	0.057
13		8	0.155
14		9	0.179
15	Postcard not returned and no match to CPS or Telematch	1 or 2	0.170
16		3	0.058
17		4	0.068
18		5	0.145
19		6	0.069
20		7	0.059
21		8	0.129
22		9	0.160

Legend for institutional stratum:
1= public less-than-2-year
2= public 2-year
3= public 4-year non-doctorate-granting
4= public 4-year doctorate-granting
5= private not-for-profit less-than-4-year
6= private not-for-profit 4-year non-doctorate-granting
7= private not-for-profit less-than-2-year
8= private for-profit less-than-2-year
9= private for-profit 2-year or more

NOTE: The CPS (Central Processing System) contains locating information for all sample members who applied for federal financial aid for a given year.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Longitudinal Study:1996/2001 (BPS:1996/2001).

Finally, a stratified sample of nonrespondents with probabilities proportional to their initial weights was selected, using the sample allocation computed in the previous step. A stratified random subsample of these cases was selected to include as part of the initial BPS:1996/2001 sample. Due to the high cost of locating these sample members and their relatively low interview rates, the remaining nonrespondents were not added to the sample.

3. BPS:1996/2001 Field Cluster Selection

Field interviewing, discussed in detail later in this chapter, required the selection of geographic clusters. These geographic clusters were selected at the start of data collection to maximize the likelihood of having a high number of sample members in each area. The geographic clusters were defined by the following multistep process:

- First, a unique zip code was associated with each sample member, based on their "best address" available. The U.S. Postal Service's address standardizing service was used to clean addresses and obtain zip codes for as many addresses as possible.
- Next, RTI's geographic information system (GIS) was loaded with each sample member's zip code.
- Finally, the GIS plotted each zip code, identifying concentrations of sample members within 50-mile radii.

This process resulted in 30 geographic clusters, each containing between 63 and 900 potential field cases. CATI nonrespondents were assigned to one of the 30 geographic clusters based on the latest tracing information available at the time that a sample member was identified for field interviewing. If the most recent locating information fell outside the 30 clusters, the case was treated as a "hard to reach" case (described below).

B. Data Collection Design

1. Instrument Development

The BPS:1996/2001 interviews were conducted using computer-assisted interviewing (CAI) technology to conduct both telephone and in-person interviews. In preparation for the development of the CATI/CAPI instrument, a comprehensive set of data elements was developed from a review of the data elements used for the BPS:90 cohort, their relationship to the NPSAS:96 and BPS:96/98 data elements, the reliability of responses obtained in BPS:90, and their relevance to current research and policy issues. To allow for cross-cohort comparisons with BPS:90/94, the data elements included retrospective information.[6] A preliminary set of BPS:1996/2001 data elements was refined with input from the study's Technical Review Panel (TRP; see **appendix A** for a list of members) as well as from NCES and other Department of

[6] Because BPS:90/94 occurred in the fifth academic year and BPS:1996/2001 occurred in the sixth academic year, retrospective information was collected to allow comparisons between the two cohorts. See **figure 1.1** and the accompanying discussion in chapter 1 regarding the timing of the follow-ups of the two cohorts.

Education staff. The final set of data elements is presented in **appendix B**.

Based on the data elements, the BPS:1996/2001 CATI/CAPI instrument was first developed for the field test data collection effort and then, with feedback from NCES and recommendations from the TRP, revised for the full-scale data collection. The instrument was structured by identifying section topics and determining the progression of items within sections. Individual items were designed with several goals in mind: (1) using existing items (that have been previously tested) when feasible; (2) ensuring consistency with NPSAS:96, BPS:96/98, and BPS:90/94 items when items were not identical; and (3) identifying and preparing wording for item verifications and probes as necessary. Detailed instrument specifications were written for each item, including variable names and definitions, skip patterns, and out-of-range limits.

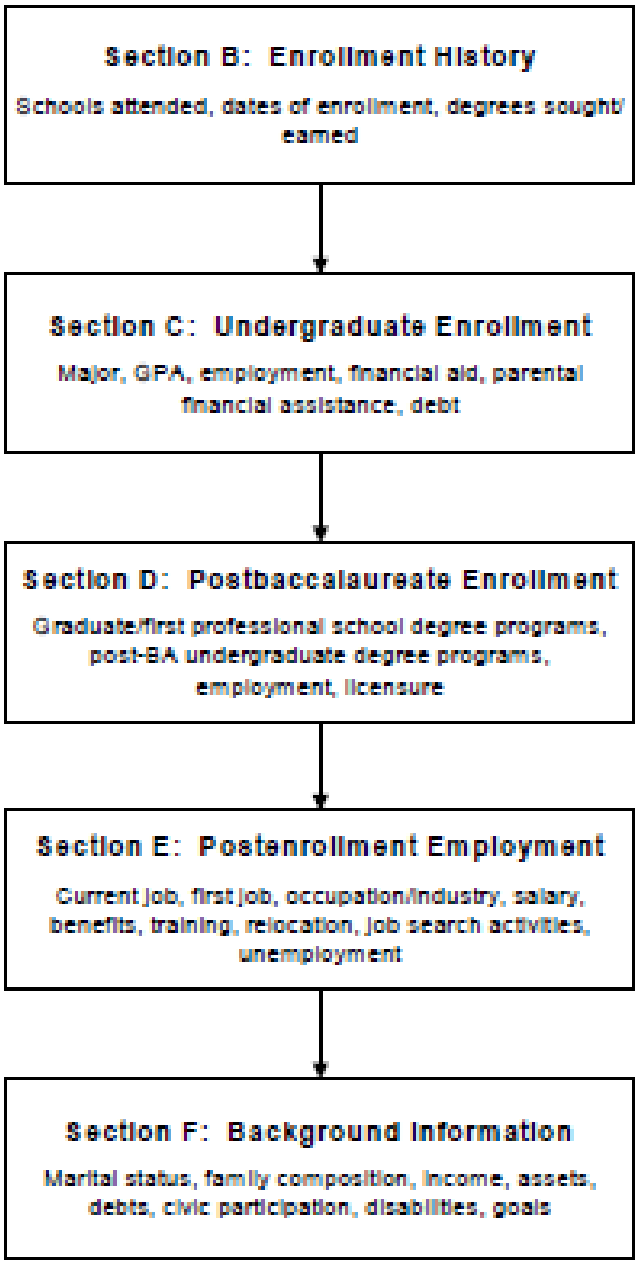
Instrument sections were reviewed on a flow basis by NCES. As depicted in **figure 2.1**, the first section collected information about all postsecondary enrollment since the previous interview.[7] The next two sections collected information about undergraduate and post-baccalaureate (graduate or additional undergraduate) school experiences, respectively. Employment, particularly addressing rate of return policy issues, was the focus of the fourth section. This section asked about the first job after leaving school for those who were not asked about first job in the BPS:96/98 interview (because they were still enrolled), as well as current job information. The final section collected background and current status information such as family formation/household composition, income, debts, civic participation, disabilities, and goals. A facsimile interview is provided in **appendix C**.

Despite different data collection methods, the CATI and CAPI interviews were programmed identically, using version 4.3 of the Computer-Assisted Survey Execution System (CASES) software. The CATI/CAPI system presented interviewers with screens of questions to be asked of the respondents, with the software guiding the interviewer and respondent through the interview. Inapplicable questions were automatically skipped based on prior response patterns and preloaded information. Wording for probes was suggested when a respondent provided a response that was out of range for a given item. Help text was provided for each screen in the event that clarification of question intent was required. Online coding programs for IPEDS, enrollment terms, major, financial aid, and occupation/industry were incorporated to allow standard coding of responses.

Concurrent with the design and programming of the CATI/CAPI instrument, instrument documentation was entered into an integrated data dictionary system (DDS), which subsequently facilitated production of data files with CATI/CAPI variable documentation. An abbreviated instrument was developed for the purpose of interviewing special respondent groups such as sample members whose primary language is Spanish. The abbreviated instrument, also presented in **appendix C**, focused on the respondent's postsecondary enrollment history, undergraduate experiences, employment, and family formation.

[7] The instrument consisted of sections B through F. The need for section A, Eligibility Determination, was eliminated as all sample members were either NPSAS:96 or BPS:96/98 respondents.

Figure 2.1.—Structure and flow of the BPS:1996/2001 interview



To minimize the interview burden on respondents, the CATI/CAPI instrument used extant data whenever feasible. Preloaded values from the locator database and data from the NPSAS:96 and BPS:96/98 interviews were used to confirm the identity of sample members and to reduce data collection time, effort, and cost. The preloaded data dictated the flow of many portions of the interview. Certain questions were asked only if the data were missing from prior interviews. Other questions used the NPSAS:96 and BPS:96/98 preloads to provide context (e.g., "I'd like to begin by asking you some questions about your school enrollment since the last time we talked to you in *1998*. According to our records, you were enrolled at *North Carolina State University* at that time. Are you still enrolled there?"). In other questions, respondents were asked to update information since the last interview based on preloaded information (e.g., "Last time we talked to you, your major or program of study while attending North Carolina State University was *electrical engineering*. Is that still your major?").

Once CATI/CAPI programming was completed, test cases were developed and loaded for instrument testing and interviewer training. Project staff systematically tested the CATI/CAPI instrument prior to the start of interviewer training. Finally, preload files containing data from NPSAS:96, BPS:96/98, and the Department of Education databases were prepared and loaded into the CATI/CAPI system to both guide the interview and assist sample member locating efforts. Data collection commenced only after all of these tasks were complete.

2. Locating

The BPS:1996/2001 sample members were at a stage in their lives where they tended to be highly mobile, having moved at least once, if not multiple times, since they were last interviewed. Consequently, it was a difficult population to locate. The BPS:1996/2001 design involved tracing sample members to their current location and conducting an interview by telephone (CATI) or in person (CAPI) with them about their experiences since their last interview (the BPS:96/98 interview 3 years earlier or the NPSAS:96 interview 5 years earlier). The locating activities, depicted in **figure** 2.2 and discussed in the following sections, involved advance locating conducted before the start of CATI, locating activities performed by telephone interviewers as part of CATI operations, intensive tracing by RTI's Tracing Operations Unit (TOPS), and field locating.

a. Advance Locating

Locating information was collected during the NPSAS:96 and BPS:96/98 interviews and incorporated into the locator database. The locating information included the sample members' local and permanent addresses and telephone numbers, the addresses and telephone numbers of parents and friends of sample members, drivers license information, and Social Security Numbers. These locating data were updated by the U.S. Postal Service National Change of Address (NCOA) and by Telematch operations, which provided updated address and telephone number information, respectively. Department of Motor Vehicle (DMV) searches were conducted in the six states containing the largest concentrations of sample members (California, Texas, Florida, New York, Illinois, and Michigan) to obtain additional locating information.

Figure 2.2.—BPS:1996/2001 full-scale data collection: tracing activities

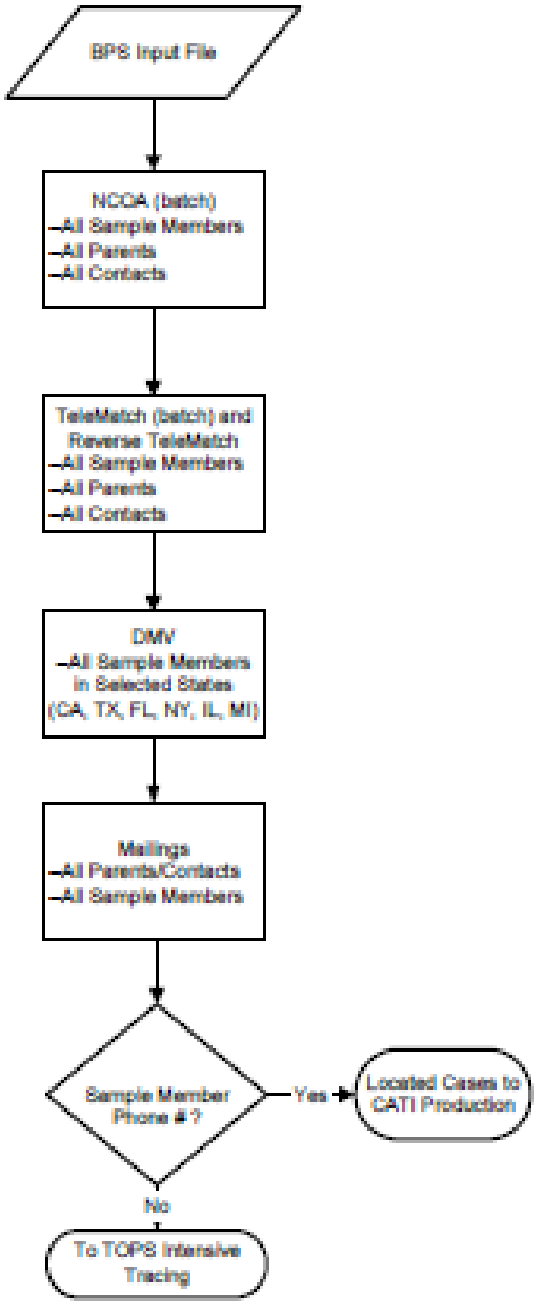
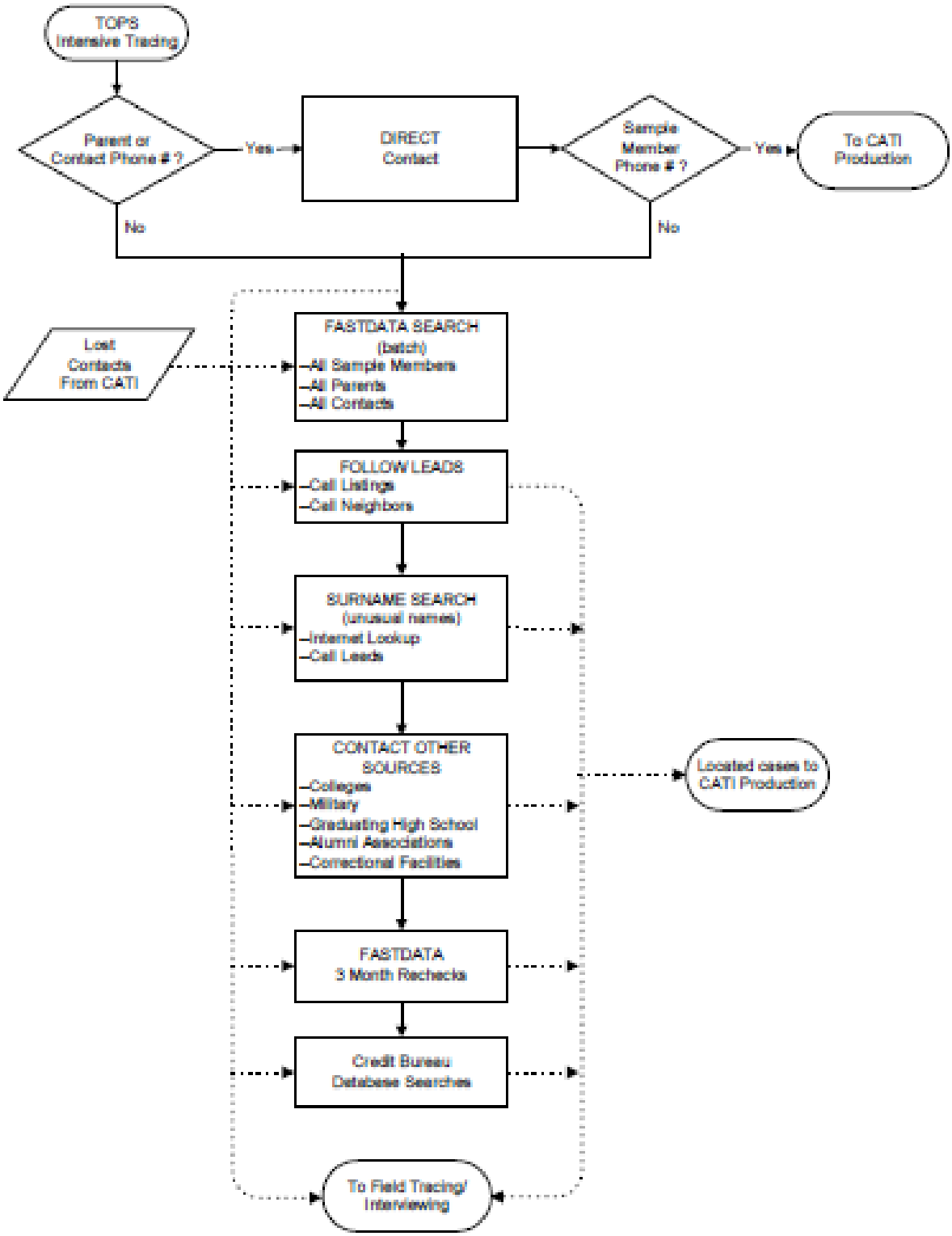


Figure 2.2.—BPS:1996/2001 full-scale data collection: tracing activities—Continued



Four months prior to the start of data collection, a mailing, consisting of a letter, a study leaflet, and an address update information sheet, was sent to the parents or other contacts of sample members to update the most recent sample member addresses and to gain cooperation by explaining the purposes of the study. A similar mailing, consisting of a letter, a study leaflet, a call-in card, and an address update information sheet (examples of each are in **appendix D**), was sent to sample members immediately prior to the start of data collection. The purpose of this mailing was to notify the sample members of the upcoming interview, inform them of their rights as participants, stress the importance of the study and urge their participation, and obtain additional postal service address updates. The mailing also gave sample members the opportunity to complete and return an address update form. New contact information obtained from the mailing was entered into the locator database.

To expand efforts to gain parent cooperation, a postcard was mailed to the parents of sample members at the beginning of the data collection period, informing them of the upcoming data collection. The postcard consisted of a note explaining the study as well as a perforated card for the parent to tear off and give to the sample member (see **appendix D**). The card asked the sample member to call in using the toll-free telephone number shown and complete the interview at his or her convenience. This addressed a problem encountered in the field test and other NCES studies, namely, that parents sometimes acted as "gatekeepers" making it difficult to locate and speak with the sample member.

Additional pre-CATI tracing was performed for sample members identified as BPS:96/98 nonrespondents, those with insufficient telephone number information, and those for whom we received undeliverable mail returns through RTI's TOPS Unit. TOPS's intensive tracing operations are described below.

b. CATI Locating

In addition to the advance locating activities described above, tracing efforts were undertaken by interviewers in the Telephone Survey Unit (TSU), concurrent with their efforts to gain cooperation from and interview sample members. When assigned a case, the telephone interviewer called the telephone number designated by the system as the best number (i.e., the number among all available locator numbers that appeared to have the greatest potential for contacting the sample member) and attempted to interview the designated sample member. If the person at that number indicated that the sample member could not be reached there, the interviewer requested additional contact information for the sample member. If the person was unable to provide additional information, the interviewer called additional telephone numbers associated with the case in an attempt to locate the sample member. After all possible telephone numbers for the case were exhausted without success, the case was assigned to TOPS for intensive tracing.

c. Intensive Tracing

Intensive tracing was performed by RTI's TOPS unit, which had access to both proprietary and public domain data. TOPS tracers had real-time access to consumer databases that contained current address and phone listings for the majority of consumers with credit histories. In addition to proprietary databases, TOPS had access to various other information sources, such as Datamineers, commercial list-houses, and NCOA via leased line. These sources searched for name, address, neighbor, business, telephone number, and status (decedent, incapacitated, military).

A two-tiered intensive tracing plan was used to locate sample members. The first tier involved identifying sample members with Social Security Numbers and processing that information through two credit bureau searches. If the searches generated a new telephone number, that case was returned to TSU for telephone interviewing. If a new address was generated but no telephone number was provided, tracers called directory assistance or queried other databases to obtain telephone numbers for CATI. This first level of effort minimized the time that cases were out of production.

The more intensive second tier was implemented for those cases where the first level searches were unsuccessful. This involved the following tracing procedures: (1) checking directory assistance for telephone listings at various addresses; (2) using reverse-match databases to obtain the names and telephone numbers of neighbors and then calling the neighbors; (3) calling persons with the same unusual surname in small towns or rural areas to see if they were related to or knew the sample member; (4) contacting the current or last known residential sources such as the neighbors, landlords, current residents, tax assessors, realtors, and other business establishments related to previous addresses associated with the sample member; (5) calling colleges and military establishments to follow up on leads generated from other sources; and (6) checking various tracing Web sites. Tracers checked new leads produced by these tracing steps to confirm the address and telephone numbers for the sample members. When the information was confirmed, the case was returned to TSU for telephone interviewing. If the information could not be confirmed (e.g., there were no working telephone numbers or numbers for relevant neighborhood sources were unpublished), and the sample member was thought to be located in one of the geographic clusters, the case was assigned to field interviewers for locating.

d. Field Locating

Locating activities were performed by field interviewers, concurrent with their efforts to interview sample members. Since the costs of conducting field locating were high, field locating efforts were implemented only when less costly efforts were exhausted. Sample members were identified as needing field locating/interviewing if they were not located using CATI-locating and centralized intensive tracing. Additionally, sample members who were located by telephone but initially refused to participate were identified as potential field cases.

Thirty geographic clusters of sample members were identified and staffed with field interviewers. The interviewers were trained to locate and interview sample members using a laptop computer. Field interviewers were provided with a checklist which included sample questions to help with tracing operations and that demonstrated the correct order in which tracing activities should be performed. The checklist was completed for each case to help identify sources considered to be most useful in locating sample members. Field interviewers documented every telephone call or field contact.

Primary tracing sources included: current or former neighbors, postsecondary schools attended, past or present employer, social agencies' records, and city and county offices. Secondary tracing sources included directory assistance, chambers of commerce, public libraries, the U.S. Postal Service, and Departments of Motor Vehicles. Other miscellaneous sources, useful in some cases, included small town police or sheriff's departments, fire departments or emergency rescue squads, local newspapers, public housing authorities, mobile home park managers, motel staff, probation officers, and permit issuing departments at the city level (new construction). A contact script guided interviewers in soliciting information from various sources.

3. Interviewing

a. Training of Interviewers

The training program for telephone and field interviewers was designed to maximize active participation. Training for telephone interviewers and their supervisors, conducted immediately prior to the start of telephone interviewing, consisted of a study overview, review of confidentiality requirements, demonstration interview, question-by-question review of the BPS:1996/2001 instrument, and hands-on practice exercises with the instrument, tracing module, and online coding modules. Interviewers were also trained in techniques for gaining cooperation with sample members, parents, and other contacts, as well as techniques for addressing the concerns of reluctant participants and avoiding refusals. Training for field interviewers and their supervisors similarly consisted of lectures, demonstrations, and hands-on practice exercises with the instrument and online coding modules. In addition, field interviewers were trained on field-specific operations, including the field management system and field tracing procedures. The BPS:1996/2001 telephone and field interviewer training agendas and the table of contents from their respective training manuals are located in **appendix** E.

b. Telephone Interviewing

CATI locating and interviewing began in February 2001 upon completion of telephone interviewer training. CATI procedures included attempts to locate, gain cooperation from, and interview study sample members by telephone.

Locating information gleaned from the advance locating sources described above and from prior interviews with the sample member was preloaded into the CATI system. Each case had a call roster with names and telephone numbers associated with the sample member (e.g., parents, other contacts such as friends or relatives, sample member) for the interviewers to call.

Up to five roster-lines were preloaded with contact information. Additional roster-lines were added when CATI tracing or intensive tracing produced new contact information.

An automated call-scheduler, embedded within the CATI software, assigned cases to interviewers. This system allowed calls to be scheduled on the basis of established case priority, time of day, and history of success of prior calls at different times and on different days. Scheduler case assignment was designed to maximize the likelihood of contacting and interviewing sample members. Cases were assigned to various queues for this purpose. Some of the queues included new cases, Spanish language cases, initial refusals, and various appointment queues (e.g., firm appointments set by the sample member, appointments suggested by locator sources, and appointments for cases which were initial refusals).

Once located, some cases required special treatment. To deal with those who initially refused to participate (including locator sources who acted as "gatekeepers," preventing access to the sample member), certain interviewers were trained in refusal conversion techniques. Sample members and their locator sources who spoke only Spanish, primarily located in Puerto Rico, were assigned to bilingual interviewers.

Results of CATI interviewing were monitored daily through the study Integrated Management System. Daily reports of production, with revised projections of future production to satisfy study requirements, were available to both NCES and contractor staff.

Finally, in an effort to increase study response rates, a modest incentive was used with particular types of nonrespondents: (1) cases where the sample member initially refused the interview, (2) sample members for whom intensive tracing yielded a good mailing address, but no telephone number, and (3) cases identified as "hard to reach" (i.e., those with 15 or more call attempts, where contact had been established with the sample member but no appointment could be scheduled). The subsample of BPS:96/98 nonrespondents was offered an incentive as well, although because subsample members were expected to be difficult cases, their incentive was offered before any attempt was made to interview them. The incentive mailing consisted of a letter from the project director tailored to the specific type of nonrespondent (i.e., refusal or no telephone number/hard to reach). A $5 bill was included with the letter. Respondents received a check for an additional $15 when they completed the interview. The incentive letters, shown in **appendix D**, were mailed on a flow basis as respondents met one of the criteria described above. All cases assigned to field interviewers were automatically eligible to receive the incentive.

c. Field Interviewing

Field interviewing activities began upon completion of interviewer training and assignment of field cases, approximately 12 weeks after the start of CATI interviewing. CAPI procedures included attempts to locate, gain cooperation from, and interview study sample members either by telephone or in person. The goal of the field interviewing effort was to increase the response rate by locating hard to reach sample members and by persuading reluctant sample members to complete the interview. Field interviewers were often successful in gaining cooperation where CATI failed to do so for a number of reasons: (1) a sample member using Caller ID to screen out calls from our CATI call center may have been more inclined to answer

the phone when the field interviewer's local telephone number was displayed, (2) many of the field interviewers were more experienced in refusal conversion, and (3) sample members were less likely to refuse in person.

All sample members who were finalized in CATI and by TOPS as "unlocatable" were eligible for assignment to the field for CAPI interviewing. Sample members who had not completed the BPS:1996/2001 interview at the time field interviewing began and who resided in an identified geographic cluster were immediately assigned to a field interviewer. Field interviewers were provided with a detailed case history documenting all prior activity taken for the case. Nonrespondent cases not in a geographic cluster were sent for additional intensive tracing with RTI's TOPS unit. An additional mailing was sent to the best address identified for the sample member, and the case incentivized as "hard to reach."

Upon successfully locating sample members, field interviewers attempted to complete the interview using the same instrument used by telephone survey personnel. The field staff were supported by a computerized control system that tracked field assignments and assigned interview status codes. Daily reports tracked the field effort.

C. The Integrated Management System

All aspects of the study were under the control of an Integrated Management System (IMS). The IMS was a comprehensive set of desktop tools designed to give project staff and NCES access to a centralized, easily accessible repository for project data and documents. The BPS IMS consisted of several components, or modules: the management module, the Receipt Control System (RCS) module, and the CATI/CAPI module.

The *management* module of the IMS contained tools and strategies to assist the project staff and the NCES project officer in managing the study. All information pertinent to the study could be found here, accessible via the World Wide Web, in a secure desktop environment. Available on the IMS were the current project schedule, monthly progress reports, daily data collection reports and status reports (available through the *Receipt Control System* described below), project plans and specifications, key project information and deliverables, instrument specifications, staff contacts, the project bibliography, and a document archive. Also accessible from the management module was a downloadable version of the CATI/CAPI instrument for testing and review.

The *Receipt Control System* (RCS) is an integrated set of systems that was used to monitor all activities related to data collection, including tracing and locating. Through the RCS, project staff were able to perform stage-specific activities, track case status closely, identify problems early, and implement solutions effectively. The RCS's locator data were used for a number of daily tasks related to sample maintenance. Specifically, the mailout program produced mailings to parent/contacts and sample members, the query system enabled administrators to review the locator information and status for a particular case, and the mail return system enabled project staff to update the locator database as mailings or reply sheets were returned or forwarding information was received.

Another component of the RCS was the *Field Case Management System* (FCMS) which controlled field interviewing activities. The FCMS allowed field staff to conduct tracing and interviewing activities, communicate with RTI staff via electronic mail, transmit completed cases, and receive new cases. The RCS also interacted with the TOPS database sending locator data between the two systems as necessary.

The *CATI/CAPI* module managed development of the CATI/CAPI instrument within the Data Dictionary System (DDS). The DDS consisted of a set of linked relational files and associated utilities for developing and documenting the instrument. Developing the CATI/CAPI instrument with the DDS ensured that all variables were linked to their item/screen wording and were thoroughly documented. Also included within the CATI/CAPI module was online coding software ("user exits") that collected detail on schools attended, enrollment, major, financial aid, occupation, and industry.

D. The Variable Tracking System

The central mechanism for constructing input files for the electronic codebook (ECB) developed by NCES is a software application called the Variable Tracking System (VTS). The VTS tracks and stores documentation for both interview and derived variables required for the ECB and Data Analysis System (DAS). This includes weighted and unweighted variable distributions, variable labels and codes, value labels, and a text field describing the development of each variable and the programming code used to construct it. Input files for the ECB and DAS systems are automatically produced by the VTS according to NCES specifications.

Appendix J: National Education Longitudinal Study of 1988: Base-year to Fourth Follow-up Data File User's Manual (Curtin, Ingels, Wu, & Heuer, 2002)

Chapter II
Data Collection Instruments

This chapter provides a brief description of the form and content of the student, new student supplement, dropout, school administrator, teacher, and parent survey instruments and cognitive tests used in the base year and first and second follow-ups for the NELS:88. It also describes the instruments used for all student and dropout sample members for the third and fourth follow-up interviews, which were conducted out of school, primarily by computer-assisted interview. In addition, this chapter provides information on the high school transcript component of the second follow-up and the postsecondary education transcript component of the fourth follow-up.

2.1 Overview of Instrument Development

With each new wave of the NELS:88 data collection, the research team enhanced the data collection instruments and added new instruments, striving to maintain similar content and form among instruments for the three in-school waves, while addressing at the same time new data elements appropriate for the age and experiences of the sample cohort. Instruments for the base year included a student questionnaire, student cognitive tests, and parent, teacher, and school administrator questionnaires. In the first and second follow-ups, interviewers re-administered these instruments, except for the parent questionnaire, and also added a dropout questionnaire for sample members who had left school and a new student supplement for students who were new to the sample (e.g., "freshened" at the first follow-up). The second follow-up then reintroduced the parent questionnaire—in revised form—and added a high school transcript component. Table 2.1 summarizes the instrumentation for the three in-school waves of NELS:88. A fuller account of the instrument development process may be found in appendix A.

In designing the NELS:88 questionnaires, the research team kept in mind the longitudinal goals of the study and chose items that would be useful in predicting or explaining outcomes captured in later survey waves. Team members also sought, on the one hand, to ensure continuity and consistency with earlier NCES education longitudinal studies, and on the other, to address new areas of policy concern and recent directions in theory. Where appropriate, they drew test and questionnaire content from NLS-72, HS&B, and other NCES studies, such as the National Assessment of Educational Progress (NAEP), the Second International Math Study (SIMS), and the Schools and Staffing Survey (SASS), to ensure a common standard of measurement that would permit comparisons with other important data sources and maximize the utility of NELS:88 data. For example, they designed the mathematics tests to allow test score comparisons with both the NAEP and HS&B. Readers interested in the crosswalks between the NELS:88 questionnaires and the HS&B and NLS-72 instruments are encouraged to refer to the data file user's manuals for the waves and components of interest.

One year before each wave of the NELS:88 main study, the research team field-tested data collection procedures and instruments. Thus, they conducted the first field test with the 8th grade class of 1987. They then used field test results to inform planning for the main study, improve the measurement properties of test and questionnaire items, and identify items that needed to be modified or deleted to improve the instrument length or item format.

Table 2.1.—NELS:88 school-based survey instruments, by wave of administration: 1988-1992

Survey Instrument	Survey Wave		
	Base Year	First Follow-up	Second Follow-up
Student questionnaire	Yes	Yes	Yes
Early graduate supplement	No	No	Yes
New student supplement	No	Yes	Yes
Dropout questionnaire	No	Yes	Yes
School administrator questionnaire	Yes[1]	Yes	Yes
Teacher questionnaire	Yes	Yes	Yes
Parent questionnaire	Yes	No	Yes
High school transcript component	No	No	Yes[2]

[1] In the base year, there were two school administrator surveys: in the spring of 1988, the regular NELS:88 principal survey, and in the fall of 1989, a special principal survey on the topic of middle grades practices.

[2] The high school transcripts, which were collected in the second follow-up, span the entire high school career, including 10th grade—the modal grade of first follow-up sample members—and typically 9th grade, as well.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), 1988-1992.

2.2. Base-year through Second Follow-up Student Questionnaires

For the base year, all sample members completed a student questionnaire. For the first and second follow-ups, NELS:88 project staff re-administered the student questionnaire to all sample members who were enrolled in school during the spring term of the survey year (spring 1990 for the first follow-up, and spring 1992 for the second follow-up). In the second follow-up, they also administered it to sample members who had left school and had completed the dropout questionnaire during the first follow-up but had since passed the General Educational Development (GED) test or obtained some other equivalency certification. Sample members completed the surveys at either in-school or off-campus survey sessions. Although the base-year questionnaire was only available in English, the first and second follow-up questionnaires were available in both English and Spanish.[13]

The 60-minute, self-administered student questionnaire used in each wave collected information on a wide range of topics, including

- student background
- language use

[13] Excluding the base-year ineligible students who were reclassified as eligible in the first follow-up, 19 students completed the Spanish-language questionnaire in the NELS:88 first follow-up. Eight dropouts and 41 students completed the Spanish-language questionnaire in the second follow-up. Because of the small numbers of questionnaires completed in Spanish, flags were not created to identify these cases. The percentage of questionnaires completed in Spanish in 1990 and 1992 is similar to the percentage of HS&B respondents who opted to complete Spanish-language questionnaires in 1980 and 1982. For copies of the Spanish-language questionnaires, see the technical reports for the first- and second follow-ups (Ingels et al., NCES 94-632 and NCES 98-06).

- home environment
- perceptions of self
- occupational or postsecondary educational plans
- jobs and household chores
- school experiences and activities
- work and social activities

Information collected in the base year and in the second follow-up provided baselines for the study of two important transitions experienced by the NELS:88 cohort: the transition from elementary or middle school to high school (baseline = base year) and the transition to postsecondary education or entry into the labor market (baseline = second follow-up).

2.3 Base-year through Second Follow-up Student Cognitive Test Batteries

In addition to the student questionnaire, students completed a series of achievement tests for each wave of the study at their in-school or off-campus survey sessions. The combined tests, described below, covered four subject areas and included 116 items to be completed in 85 minutes. The four subject areas included:

1. Reading Comprehension (21 questions, 21 minutes)

   This subtest contained five short reading passages or pairs of passages, with three to five questions about the content of each passage. Questions tested the students' ability to understand the meaning of words in context, identify figures of speech, interpret the author's perspective, and evaluate the passage as a whole. One version of the reading test was administered in the base year, and two versions in the first and second follow-ups.

2. Mathematics (40 questions, 30 minutes)

   Test items included word problems, graphs, equations, quantitative comparisons, and geometric figures. Some questions could be answered by simple application of skills or knowledge; others required that the student demonstrate a more advanced level of comprehension and/or problem solving. One version of the mathematics test was administered in the base year, and three versions in the first and second follow-ups.

3. Science (25 questions, 20 minutes)

   The science test contained life science, earth science, and physical science/chemistry questions and placed emphasis on the student's understanding of underlying concepts rather than on his or her retention of isolated facts.

4. Social Studies: American History/Citizenship/Geography (30 questions, 14 minutes)

   The social studies test included three categories of questions: American history, citizenship, and geography. The American history questions asked about important issues and events in political and economic history from colonial times through the recent past. Citizenship items quizzed students on the workings of the federal government and the rights and obligations of citizens. The geography questions touched on patterns of settlement and food production

shared by various societies.

The Educational Testing Service (ETS) developed the assessment batteries for all three NELS:88 in-school waves, including one test form for the base year and six forms for both the first and second follow-ups. The difficulty level of the mathematics and reading questions differed on each of the six follow-up forms, and each sample member's test form was determined by his or her scores on the base-year and/or first follow-up mathematics and reading tests. Freshened students and prior-round nonrespondents received the intermediate version of the tests.

The multilevel design of the NELS:88 achievement tests guarded against ceiling and floor effects that can occur when testing spans four years of schooling. This adaptive approach tailored the difficulty of the reading and mathematics tests to the ability of the respondent, thereby leading, given limitations in testing time, to a more accurate measurement than a single-level design. The following tables present the content and process areas for the NELS:88 cognitive tests in reading (table 2.3-A), mathematics (table 2.3-B), science (table 2.3-C), and social studies (table 2.3-D).

Table 2.3-A.—Base-year to second follow-up cognitive test specifications in reading: Content by process and test form: 1988-1992

Process	Number of items		
	Literary	Science	Social Studies/Other
Reproduction of Detail			
8th Grade	3	1	–
10th Grade Low	3	1	–
10th Grade High	2	1	1
12th Grade Low	3	1	1
12th Grade High	–	–	1
Comprehension of Thought			
8th Grade	1	1	1
10th Grade Low	1	1	1
10th Grade High	3	1	2
12th Grade Low	–	2	4
12th Grade High	–	1	8
Inferences and/or Evaluative Judgements			
8th Grade	10	1	3
10th Grade Low	10	1	3
10th Grade High	9	1	1
12th Grade Low	6	1	3
12th Grade High	4	3	3

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, 1988–2000 (NELS:88), 1988-1992.

Table 2.3-B.—Base-year to second follow-up cognitive test specifications in math: Content by process and test form: 1988-1992

Process	Number of items: Arithmetic	Algebra	Geometry	Data Analysis/ Probability	Advanced Topic (e.g., precalculus, analytic geometry)
Skill/Knowledge					
8th Grade	10	5	1	1	–
10th Grade Low	12	4	2	–	–
10th Grade Medium	9	3	–	1	1
10th Grade High	6	3	–	2	2
12th Grade Low	10	4	2	–	–
12th Grade Medium	7	2	–	1	1
12th Grade High	1	2	–	1	2
Understanding/Comprehension					
8th Grade	6	7	3	3	–
10th Grade Low	7	6	3	2	–
10th Grade Medium	6	6	3	2	–
10th Grade High	3	7	2	3	2
12th Grade Low	6	5	3	3	–
12th Grade Medium	4	6	4	2	–
12th Grade High	1	5	7	1	3
Problem Solving					
8th Grade	3	–	–	–	1
10th Grade Low	3	–	–	–	1
10th Grade Medium	3	2	2	–	2
10th Grade High	2	2	3	–	2
12th Grade Low	4	–	2	–	1
12th Grade Medium	4	3	5	–	1
12th Grade High	2	4	9	1	1

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), 1988-1992.

Table 2.3-C.—Base-year to second follow-up study cognitive test specifications in science: Content by process and test form: 1988-1992

Process	Number of items:				
	Earth Science	Chemistry	Scientific Method	Life Science	Physical Science
Skill/Knowledge					
8th Grade	5	2	–	3	–
10th Grade	3	2	–	2	1
12th Grade	3	3	–	3	1
Understanding/Comprehension					
8th Grade	2		1	2	–
10th Grade	2	2	1	2	1
12th Grade	1	1	3	1	–
		–			
Problem Solving					
8th Grade	1	3	2	2	–
10th Grade	–	3	1	3	2
12th Grade	–	3	1	2	4

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), 1988-1992.

Table 2.3-D.—Base-year to second follow-up cognitive test specifications in social studies: Content by process and test form: 1988-1992

Process	Citizenship/ Government	American History	Geography
8th Grade	13	14	3
10th Grade	12	19	3
12th Grade	8	15	3

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), 1988-1992.

Various achievement test scores, both normative and criterion-referenced, are reported in NELS:88. Available NELS:88 scores (including IRT-estimated Number Right scores, IRT theta scores, achievement quartiles, proficiency scores, and continuous probability of proficiency scores) are most fully described in appendix H (pp. H-31 – H-38) of the *NELS:88 Second Follow-Up Student Component Data File User's Manual* (Ingels, Dowd, Baldridge, Stipe, Bartot and Frankel, 1994, NCES 94-374). The psychometric basis for the scoring is described in the *Psychometric Report for the NELS:88 Base Year Through Second Follow-Up* (Rock and Pollack, 1995, NCES 95-382). The psychometric report also provides information about test reliability and validity and test specifications.

2.4 First and Second Follow-up Dropout Questionnaires

In the first follow-up, NELS:88 project staff administered a dropout questionnaire to sample members who, according to data gathered through administration of a status screener, were not in an

academic program leading to a high school diploma. This group included sample members who had received a GED or other alternative certification.

In the second follow-up, sample members who were not enrolled in a diploma-granting program and who furthermore had not obtained a GED or other alternative certification completed the dropout questionnaire (sample members with a GED or other certification completed the second follow-up student questionnaire and early graduate supplement). An interviewer was normally present at the group and individual survey sessions while students completed the hour-long, self-administered dropout questionnaire. The first follow-up questionnaire was available in English only, and the second follow-up questionnaire was available in both English and Spanish.

The dropout questionnaires collected data about the following areas:

- the last school attended by the sample member and the school's climate;
- reasons for leaving school, and actions school personnel, parents, and friends took when the respondent stopped going to school;
- the sample member's likelihood of returning to and graduating from high school; and
- the sample member's current activities, employment history, and future plans.

The research team designed the dropout questionnaire to facilitate comparisons with the NELS:88 first and second follow-up student questionnaires and the HS&B 1982 dropout questionnaire. Item overlap between the NELS:88 dropout and student questionnaires will permit NELS:88 data users to compare the school environment and experiences, family life and background, aspirations, and self-perceptions of students and dropouts. The overlap of 1982 and 1992 dropout items will facilitate comparison of contemporary dropouts with those of a decade before (see Ingels and Dowd 1995).

In both rounds, dropouts also completed the 85-minute cognitive test battery described in Section 2.3. Because of the difficulty in collecting test data from dropouts and because data from many dropouts were collected in telephone interviews that precluded testing, the NELS:88 second follow-up achieved a comparatively low (41.7 percent) weighted cognitive test completion rate for dropouts.

2.5 Supplemental Student Questionnaires

2.5.1 First and Second Follow-up New Student Supplements

For the first and second follow-ups, sample members who were first-time NELS:88 participants—due to freshening or previous ineligibility or nonparticipation—completed the new student supplement questionnaire, which was available in English and Spanish.[14] The self-administered supplement took approximately 15 minutes to complete and gathered the same basic demographic information (such as birth date, sex, family socioeconomic status, and race/ethnicity) that the base-year questionnaire had gathered for other students and their families. Because of the unchanging nature of the data, the follow-up surveys did not include questions on these topics again.

[14] In the second follow-up, survey staff also administered the new student supplement to a number of first follow-up freshened students who had completed a first follow-up student questionnaire but had not completed a new student supplement in 1990.

2.5.2 Second Follow-up Early Graduate Supplement

NELS:88 participants who graduated from high school or who obtained equivalency certification, such as the GED, before the spring 1992 data collection completed the early graduate supplement to the second follow-up student questionnaire. This supplement documents the reasons for and the circumstances of early graduation, the adjustments required to finish early, and respondents' activities compared with those of other school survey members. Instrument developers modeled the items for the NELS:88 early graduate supplement on the items used in the HS&B sophomore cohort early graduate supplement administered in the HS&B first follow-up in 1982.

2.6 Questionnaires for the Student Sample in the Out-of-School Rounds

By the time of the third follow-up in 1994, very few NELS:88 8th-grade cohort members remained in high school. This meant that while previous questionnaires (and tests) had been administered in group settings in school and optically scanned, a different mode of data collection was now required. The dominant administration form for all 1994 sample members was a one-on-one telephone interview, in a computer-assisted format (CATI, or computer-assisted telephone interviewing). The design of the 1994 questionnaire therefore departs from that of the prior rounds. By moving to an electronic format, key information could be preloaded into the interview, and automated consistency checks could be built into the interview process, minimizing the missing/inconsistent data retrieval and backend editing tasks which were an important element of the in-school rounds.

2.6.1 NELS:88 Third Follow-up Student Interview

Just as the form of the third follow-up questionnaire in 1994 differed from the form of the earlier instruments, the content differed as well, as the sample members followed diverse pathways in their transition from high school to postsecondary education or to work. Instrument developers designed the third follow-up questionnaire to focus mainly on postsecondary access and employment and to elicit valid contemporary information about these topics while maintaining as much continuity as possible with the prior NCES youth transition studies, NLS-72 and HS&B. Specific content areas included academic achievement, feelings about respondents' postsecondary institution and/or job, detailed work experience, work-related training, and family structure and environment.

Researchers field-tested the NELS:88/94 instrument in 1993 and refined it for the full-scale study based on recommendations made at the November 1993 Technical Review Panel (TRP) meeting. Members of the NELS:88 TRP included academic researchers, policy analysts, and representatives of various government agencies.

The research team conducted the NELS:88/94 interviews primarily by telephone, using CATI technology. For those cases, however, where the respondent was unable or unwilling to complete an interview over the telephone, a paper questionnaire was either self- or field-administered. The CATI system presented the questionnaire items to the interviewer on a series of screens, each with one or more questions. Between screens, the system evaluated the responses and used the results to route the interview to the next appropriate question. The system also applied a series of cross-checks to the responses, such as valid ranges, data field size and data type (e.g., numeric or text), and consistency with other answers or data from previous rounds. In addition, when the interviewer encountered problems, the system could suggest prompts to use in eliciting a better or more complete answer.

The 1994 study followed the progress of the NELS:88 cohort as sample members moved to a wide array of postsecondary activities. The study addressed issues of employment and postsecondary

access, and it sustained continuing trend comparisons with NLS-72 and HS&B. Specific content areas, described below, included family structure, high school and postsecondary academic achievement, employment experience, work-related training, environment, and locating. See the *NELS:88/94 Methodology Report* (NCES 96-174) for the CATI instrument code, which contains question text and interviewer instructions and information about preloaded data and flow. The NELS:88/94 Electronic Codebook (ECB) and the *NELS:88 Second Follow-Up: Student Component Data File User's Manual* (NCES 94-374) also contain question text for the third follow-up instrument. In addition, the facsimile of the NELS:88/94 instrument is available on the NCES NELS:88 Web site: http://nces.ed.gov/surveys/nels88/. For a summary of outcomes in 1994 covering the thematic areas listed below, see Sanderson, Dugoni, Rasinski and Taylor, 1996, *National Education Longitudinal Study 1988-1994 Descriptive Summary Report With an Essay on Access and Choice in Postsecondary Education*, (NCES 96-175).

Family structure. Family formation has been an integral component of NELS:88 since the second follow-up survey. This section of the NELS:88/94 instrument collected data on household composition, marital status, number of times married, date of first marriage, number of children, and the children's birth dates.

High school completion. Approximately 16 percent of the NELS:88 cohort had not completed high school by August of 1992. Roughly 8 percent were still enrolled and 8 percent were high school dropouts. This section collected high school information for those sample members who had not completed high school at the time of the last interview and included questions about completion status, last high school attended, dates of enrollment, highest grade attended and completed, type of high school program, type of degree/certification offered by program, and GED completion date.

Postsecondary school access and achievement. The third follow-up of NELS took place two years after most NELS sample members graduated from high school; thus, many had enrolled in a postsecondary school (e.g., community college, 4-year program). For those who had taken classes or enrolled in a postsecondary program, this section asked questions about each postsecondary institution the sample member attended, including level and control of institution, cost of tuition, dates attended, stopout activity (i.e., whether the respondent had taken time off from school before returning to the classroom), major/field of study, certificate/degree type, and certificate/degree completion and date. In addition, the questionnaire collected financial information, such as types and amount of financial aid received, and employment while enrolled.

Employment experience. The employment and income of NELS sample members, both those who were concurrently enrolled in postsecondary school and those who were not enrolled, are important to better understand the economic returns of education. This section collected information about the sample members' employment since the last interview, including spells of employment, number of jobs, job title and type of business, hours worked and income, apprenticeships, benefits, satisfaction, and expected occupation and income at age 30.

Work-related training. In addition to, or in place of formal education, workers often require specialized skills in order to do their jobs. Employers are increasingly turning to on-the-job training as a means for teaching employees new skills and competencies. The NELS questionnaire identified those who received on-the-job training and asked them about the type and amount of training, where the training took place, and how closely the training was related to their job. It also collected information about occupational licenses.

Environment. Noneconomic returns to society, such as civic involvement, are outcomes also thought to be correlated with education. The NELS:88/94 instrument included questions about the leisure

activities of sample members, such as time spent watching television, and participation in sports or religious activities. It also included items on community service and voting behavior. In addition, the questionnaire asked a set of questions about sexual activity.

Locating. The questionnaire collected locating information to aid in tracing the sample members for the next follow-up study. Items included sample member's current address and telephone number; addresses, telephone numbers, and relationship of two contacts; and driver's license information.

2.6.2 NELS:88 Fourth Follow-up Student Interview

The research team conducted the field test and full-scale NELS:88/2000 interviews both by telephone using CATI and in person using computer-assisted personal interview (CAPI) technology. In preparation for the development of the CATI/CAPI instrument, the team developed a comprehensive set of data elements from a thorough review of the data elements provided in the study solicitation, the data elements relationship to earlier administrations of NELS:88 and other elements of the education longitudinal study series, and the elements relevance to current research and policy issues. From the set of data elements, instrument developers structured the CATI/CAPI instrument by identifying section topics and determining the progression of items within sections. They then designed individual interview items with several goals in mind: (1) use prior NELS:88 items when feasible; (2) ensure consistency with prior NELS:88 items when items were not identical; and (3) identify and prepare wording for item verifications and probes, as necessary. Finally, they refined interview items for the full-scale study based on feedback from the members of the fourth follow-up study's TRP.

Despite different data collection methods, the CATI and CAPI interviews were programmed identically. The CATI/CAPI system software facilitated the preloading of full-screen data entry and editing of "matrix-type" responses. The system presented interviewers with screens of questions to ask respondents, with the software guiding the interviewer and respondent through the interview. The program skipped inapplicable questions automatically, based on prior response patterns and preloaded information. It also suggested wording for probes when a respondent provided a response that was out of range for a given item and displayed special screens or other prompts when the interviewer entered inconsistent or incomplete information. Preloaded data from the earlier administrations of NELS:88 minimized the interview burden on respondents and dictated the flow of many portions of the instrument.

The NELS:88/2000 instrument comprised 10 sections: current activities, employment, job-related training, high school completion, postsecondary education, adult education, family formation, income and expenses, other outcomes, and race-ethnicity/residence. The content of these sections is described below. For greater detail, refer to the facsimile and flow chart for the NELS:88/2000 instrument on the NCES NELS:88 Web site: http://nces.ed.gov/surveys/nels88/. For a summary of outcomes in 2000 covering the thematic areas listed below, see Ingels, Curtin, Kaufman, Alt and Chen, 2002, *Coming of Age in the 1990s: The Eighth-Grade Class of 1988 12 Years Later*. (NCES 2002–321).

Current activities. This section asked questions about the respondents' main activities at the time of the interview. These items provided the foundation for much of the remainder of the survey instrument, and the information was useful in identifying important subsets of the population. The section asked about sample members' current activity status (e.g., student, employee, homemaker, etc.) and, based on that status, collected information about unemployed sample members and current and former military service.

Employment. Capturing employment information for NELS participants who both did and did not enroll in postsecondary education is important to better understand the rate of economic return to individuals and society for various levels of education. The NELS employment items collected data on

job title, duties, salary, hours worked per week, job satisfaction, and autonomy for currently held job for pay or most recent job if not currently working.

Job-related training. Consensus grew over the past decade on skills required for the work force. The new flexible work force will require workers who have formal educational training and who are continuously learning new skills and competencies, some of which may be validated with formal state or professional licensure and certification. To ensure accurate recall periods and to more closely target specific opportunities for training, this section asked about job-related training received in the last 6 months of the current (or most recent) job. Interviewers questioned members of the sample cohort who received such training, on the structure, purpose, and impact of their job-related training activities.

High school completion. A key milestone in a young person's life is completion of high school. By 1994, more than 87 percent of the NELS:88 cohort had earned a high school diploma or GED. The NELS:88/2000 interview updated high school completion information for those who had not completed high school by 1994 or who were not interviewed in 1994. Interviewers asked students who had obtained a GED their reasons for completing their high programs with the equivalency exam and whether they participated in a GED study program.

Postsecondary education. The postsecondary data items in the fourth follow-up of NELS, conducted 8 years after most NELS participants graduated from high school, provide important information for addressing issues of student access to postsecondary education, patterns of persistence within the system, and postsecondary educational attainment. This section collected the names, locations, and IPEDS codes[15] for all postsecondary institutions attended by sample members since high school graduation, degrees or certificates obtained, date of degree/certificate, and field of study. This section also collected information about postsecondary education experiences and aspirations.

Adult education. This section explored the ways in which respondents engage in learning beyond formal postsecondary education and job-related training. Young adults have a wide range of educational opportunities at their disposal from a variety of sources, and they engage in them for a variety of reasons. For example, sample members may take classes over the Internet, participate in continuing education courses at local schools and museums, and even obtain private tutors. In fact, creating lifelong learners is one of the important objectives of elementary and secondary education.

Family formation. The fourth follow-up of NELS is a rich resource of information regarding historical trends in family formation that are directly comparable to the HS&B and NLS-72 cohorts. This section collected data on current marital status, including the dates of marriage and how marriages ended (if applicable); household composition; number of dependents and children; and birth dates of the oldest and youngest children.

Income and expenses. Considering the substantial earnings advantages of education, economic returns are one of the most important outcomes of education. This interview collected information about respondents' and their spouse's or partner's income in 1999, 1998, and 1997. This section also collected other measures of financial condition, such as current housing status and public assistance.

Other outcomes. This section collected information about community integration and healthy behaviors—factors that are commonly believed to be correlated with education and labor market

[15] NCES' Integrated Postsecondary Education Data System (IPEDS) surveys all primary providers of postsecondary education in the U.S. on enrollment, faculty, staff, and finances. Each postsecondary institution is assigned a unique unit identification number. In NELS:88, IPEDS codes are available only on the restricted use files.

outcomes. Questions focused on integration with and involvement in the community (e.g., volunteerism, voting behavior); questions about health-related issues included cigarette and alcohol use.

Race-ethnicity/residence. While prior NELS:88 instruments asked for respondents' racial-ethnic status, the fourth follow-up collected multiracial responses and included greater specificity for Asian and Native Hawaiian/Pacific Islander races, in accordance with new federal standards for the collection of information on race and ethnicity. This section also included an item on the racial-ethnic diversity of the respondents' work and residential communities comparable to HS&B. The section concluded with information on the respondents' current place of residence, which can be used, in conjunction with locations during the previous follow-up and base-year surveys, to examine the mobility of young adults.

In addition to the CATI/CAPI interview just described, instrument developers created an abbreviated instrument expressly to conduct difficult-to-complete interviews with sample members. They developed this interview in two content-identical modes—hard copy and electronic versions—to collect data from sample members who either could not complete interviews by telephone (e.g., sample members without telephones or who were incarcerated) or would not complete telephone interviews (e.g., refusals). The abbreviated instrument focused on respondents' current activities, postsecondary education, and work experiences.

2.7 Base-Year through Second Follow-up School Administrator Questionnaires

The primary purpose of the school administrator questionnaire was to gather general descriptive information about the educational setting and environment associated with the individual students selected for participation in NELS:88. This school information describes the overall academic climate in terms of specific school practices and policies, as well as enrollments and educational offerings. The information obtained through the school administrator questionnaire provides supplemental data to the student questionnaire so that student outcomes can be considered in terms of school measures. The NELS:88 base-year school survey provided a national probability sample of 1988 8th-grade schools and a stand-alone school data set. *Because the first and second follow-up school samples do not constitute a national probability sample of schools, the first follow-up and second follow-up school administrator data should be used only as contextual data for student-level analyses.* While it is not correct to generalize 1990 and 1992 NELS:88 school administrator data to all the nation's high schools, NELS:88 does supply nationally representative samples of 1990 sophomores and 1992 seniors (as well as of 1988 8th-graders two and four years later). Student-administrator matches may therefore be used, as long as the student remains the unit of analysis.

In each survey wave, the NELS:88 school principal, headmaster, or other knowledgeable school official designated by the school administrator completed the self-administered school administrator questionnaire (which was 40 minutes in length in the base year, 60 minutes in the first follow-up, and 45 minutes in the second follow-up). For the first follow-up, the research team also designed an abbreviated version of the questionnaire for telephone administration to nonresponding principals. The base-year through second follow-up questionnaires contained similar content. Topics covered included:

- General school characteristics, such as grade span, school, and 12th grade enrollment sizes, and school control and demographic characteristics.
- General student characteristics for the modal grade of the survey cohort, including average daily attendance rates, ethnic and racial composition, percentage of students with limited English proficiency, and numbers of students receiving special school services.

- Teaching staff characteristics encompassing such areas as the number of full-time and part-time faculty, departmentalization of faculty, salary levels, and evaluation of teachers.
- School policies and programs, including requirements for minimum competency and proficiency tests, and programs for language minority students.
- School governance and climate, such as administration practices, school reforms, types of parental involvement, student behavioral problems in school, and areas of principal's control.

The research team designed the school administrator questionnaire so that the first several sections could be answered either by the school principal or by a designee who was able to provide the requested information. Only the principal could answer the last section, which asked for his or her subjective opinions regarding the school environment.

2.8 Base-Year through Second Follow-up Teacher Questionnaires

The NELS:88 teacher component was designed to provide teacher information that can be used to analyze the behaviors and outcomes of the student sample, including the effects of teaching on longitudinal student outcomes. ***The design of this component does not provide stand-alone analysis samples of teachers, but instead provides contextual data for analyses at the student level.*** The teacher component supports comparison of specific teacher characteristics and practices to the learning context and educational outcomes of sampled students. The component also supplies teacher ratings or evaluations of student sample members. The teacher questionnaire is the critical instrument for investigating the student's specific learning environment. At the same time, a limitation of the teacher component design is that even within a given subject, such as mathematics or science, there are gaps in coverage of some of the period during which learning is taking place (e.g., 9th- and 11th-grade teachers were not surveyed).

In both the base year and first follow-up, selected teachers completed a 45-minute, self-administered questionnaire. The teachers selected were responsible for instructing sampled students in two of the four cognitive test subjects: mathematics, science, English, and social studies (American history, civics [citizenship/government], and geography). (The four two-subject combinations normally selected for students were either mathematics or science combined with either English or social studies). In the first follow-up, when possible, NELS:88 project staff chose teachers who taught the sample member in one of the same two cognitive test areas that were chosen for that student in the base year. In some cases, however, students were not enrolled in classes in the same subject areas as they were during the base year; NELS:88 project staff therefore chose a teacher from another one of the four subjects to evaluate them. In the second follow-up, if the student was enrolled in either a mathematics or science class, survey staff again selected a teacher for one of the two subjects to respond to a 30-minute questionnaire. In all three survey waves, interviewers asked teachers to respond to the questionnaire items in relation to a specific list of sampled students enrolled in their classes.

The teacher questionnaire sought to illuminate questions of the quality, equality, and diversity of educational opportunity by obtaining information in the following four content areas:

- Teacher's assessment of the student's school-related behavior and academic performance, educational and career plans and goals. Respondents completed this section with respect to the sample members they instructed in a particular subject.

- Information about the class the teacher taught to the sample member (e.g., track assignments, instructional methods, homework assignments, and curricular contents). This section of the instrument included classroom topic coverage items ("opportunity to learn" items) that articulate with the cognitive tests.
- Information about the school social climate and organizational culture (e.g., teacher autonomy, participation in determining school policy, and relationships with the principal).
- Information about the teacher's background and activities (e.g., academic training, subject areas of instruction, years of teaching experience, and participation in professional growth activities).

A validation study of NELS:88 teacher reports on instructional content, instructional strategy, and goals was conducted in the second follow-up (Burstein et al. 1995). Teachers completed daily logs over a 5-week period, describing their instructional practices, and the research team obtained copies of teachers' textbooks and other artifacts, such as homework, quizzes, classroom exercises, projects, and exams, which they then coded. The team compared this information with survey responses.

The authors found that teachers reported curricular topics more accurately for upper-level than for lower-level courses and that survey data "reveal reasonably accurately whether a topic has been taught not at all, for only a few periods, for a week or two, or for several weeks." They found that survey data "present an accurate picture of the instructional strategies used most often by teachers, and they provide some indication of how teachers combine strategies during instruction." The authors' analysis suggests that instructional goals, however, "cannot be validly measured through national surveys of teachers."

2.9 Base-Year and Second Follow-up Parent Questionnaires

Instrument developers designed the self-administered parent questionnaire to collect information from parents about factors that influence educational attainment and participation. The objective of the parent questionnaire was to provide data that could be used primarily in the analysis of student behaviors and outcomes; it was designed only secondarily as a data set of parents. The questions focused on family background, socioeconomic characteristics, and the character of the home educational support system. In addition, the parent instrument collected data related to parental behaviors and circumstances with which the student may not have been familiar, such as parental education and occupation. It also contained more sensitive questions about income, postsecondary educational costs and financial aid decisions, and religious affiliation. In both the base year and the second follow-up, the parent questionnaire instructed the parent or guardian who was most knowledgeable about the sample member's educational activities and related behaviors to complete the questionnaire. Accordingly, the parent respondent was self-selected.

The parent questionnaire covered the following thematic areas:

- Information about the family's background (base year and second follow-up). In this section of the questionnaire, respondents identified their relationship with the student or dropout sample member, provided data on the family size and composition, and answered questions about their employment situation and occupation, race, and language background and skills.
- Information about the teenager's school life (base year and second follow-up). This section elicited parental knowledge of key characteristics of the teenager's educational situation and collected data on the forms of interaction between the school and parent.

- The teenager's family life (base year and second follow-up). This section of the questionnaire asked parents about the decision-making process within the household and the kinds of interaction between the respondent and teenager. It included several sensitive questions about community life and drug and alcohol use by the teenager.
- Opinions about the teenager's school (base year only).
- The teenager's postsecondary plans (second follow-up only). This section covered parental aspirations for the teenager, preparations for postsecondary education, and plans for the teenager's transition to the work force.
- The teenager's plans for the future (second follow-up only). This section covered parental educational aspirations for the teenager.
- Financial information and educational costs. This section included items about family income and financial preparations for the teenager's postsecondary education.
- Supplemental questions for parents new to NELS:88 in the second follow-up (second follow-up only). The research team administered the final section of the second follow-up parent questionnaire only to parents who had not participated in the base-year parent survey either because the parent or guardian was a base-year nonrespondent or because the student was added to the sample in the first or second follow-up. This section included a number of questions asked in the base-year parent survey for which new data were not required from base-year respondents. These items covered family characteristics, size, and composition in 1988, parent education, and parent age.

In the base year, a small number of parents were interviewed by telephone. In the second follow-up, a greater proportion of parents completed telephone interviews. In both surveys, the research team took a number of steps to minimize mode effects, including training interviewers to adapt questionnaire items so that they were intelligible when read over the telephone and asking parents to read along in the questionnaire during the interview if they had a copy of the self-administered questionnaire.

2.10 Transcript Studies

2.10.1 Second Follow-up Transcript Component

In the second follow-up, the research team collected high school transcripts for members of the contextual sample (students for whom contextual school and teacher data were collected), all eligible sample members who were dropouts (including GED recipients) or early graduates, and sample members who were in the 12th grade in 1992 and ineligible for all three waves of NELS:88. Collecting the high school transcripts facilitated two important research efforts:

- the validation of certain data—including high school course taking, course grades, and attendance data provided by sample members in their responses to the first follow-up and second follow-up questionnaires; and
- the investigation of course-taking patterns by sample member characteristics, and the relationship of such patterns to sample members' postsecondary activities and achievement.

The research team also conducted the transcript study to enable comparisons with the transcripts studies from HS&B (1982) and NAEP (1987, 1990, 1994, 1998, and 2000) (see Ingels and Taylor 1995,

for notes on using the various transcript data sets for trend analysis). In reviewing the transcripts, team members abstracted the following data elements:

- Student-level items, including number of absences per year, rank in class and class size, date student left school, reason student left school (graduated, transferred, etc.), cumulative GPA, and standardized scores for the PSAT, SAT, ACT, College Board Achievement tests, and Advanced Placement tests.
- Course-level items (for courses taken in grades 9 through 12), including course title, department, and number; year, grade level, and term course taken; number of credits earned; and grade awarded.

2.10.2 Fourth Follow-up Postsecondary Education Transcript Study

The research team conducted a postsecondary education transcript study after the fourth follow-up of NELS:88 in 2000, to add richness and depth to the academic data collected during the third and fourth follow-up studies. The study primarily sought to gather data on course-taking behavior and postsecondary achievement. All fourth follow-up respondents who reported any postsecondary education were included in the transcript collection study.

The research team collected data on

- institutional characteristics of institutions attended by sample members (name, location, level, control, description),
- degrees obtained (degree earned, field of study of degree), and
- course-taking behavior.

2.11 Sources of Further Information on NELS:88 Instrumentation

2.11.1 Questionnaires

English-language questionnaires for the base year through third follow-up were reprinted in the various base-year through second follow-up user's manuals. The 1990 NELS:88 Spanish language questionnaires appear in appendix K of the *NELS:88 First Follow-Up Final Technical Report* (Ingels, Scott, Rock, Pollack and Rasinski 1994; NCES 94-632; available on the NCES Web site). The 1992 Spanish language questionnaires were reprinted in Ingels, Scott, and Taylor (1998) the *NELS:88 Base Year Through Second Follow-Up Final Methodology* Report (available in the NCES Working Paper Series, [NCES 98-06]; also, the document can be downloaded from the NCES Web site).

In addition, English-language questionnaires appear on the CD-ROM release of the NELS:88/2000 data. Questionnaires can also be viewed on the NELS:88 Web pages on the NCES Web site (http://nces.ed.gov/surveys/nels88).

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Vita

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SUMMARY

- 31+ Years of Education Experience
- Established Alumni Connections
- A Thriving Fundraiser
- Excellent Management Experience
- Team-Oriented Human Relations Skills
- Successful Agent of Change

EXPERIENCE

VICE PRESIDENT FOR ADVANCEMENT – May 2004 to Present
SUNY Canton

The State University of New York College of Technology at Canton is a public, coeducational, residential college dedicated to providing varied educational opportunities within the technologies. SUNY Canton offers Baccalaureate degrees, Associate degrees, and one-year Certificates.

- Executive Management and budget control under the direction of the campus President. As Vice President, have led: Career Services, Alumni, Admissions, Athletics, Public Relations, Development, Grants, and serving as the CEO/Executive Director of the campus Foundation. Currently supervise Alumni, Development and lead the Foundation. The Foundation, a non-profit 501 (c) 3 with a 35-person Board of Directors and total assets of $42 million, supports the campus with scholarship support, faculty/staff grants, campus enhancements, and general support of nearly $2 million per year, and directs the college's fundraising efforts.

- This division of the campus was responsible to bring in the necessary funding via student enrollments, grants, and donations while presenting a positive public relations image and brand that yields higher levels of engagement of incoming students, alumni, businesses, future employers, and friends.

Summary of Major Accomplishments

- Obtained highest student enrollment in 4 of the last 6 consecutive years
- Grown the Foundation's assets from $5 million in 2004 to $42 million
- Completed $11 million fundraising campaign two years early
- Established 5 Foundation affiliate non-profit companies
- Personally yielded the college's largest two gifts totaling $3 million
- Doubled the percentage of alumni donors
- Obtained provisional NCAA D3 membership
- Obtained $27 million in private financing

- Was lead developer in $7 million wind turbine
- Doubled the number of student athletes
- Established $500,000 public/private partnership with Subaru Dist. Corp
- Lead developer in building residence hall suites
- Created museum quality history wall celebrating the first 100 years
- Refined marketing efforts and brand appeal
- Added four varsity team sports
- Expanded Foundation Board of Directors to 35

- **Enrollment Management**
    - Doubled student applications within four of the last six years
    - Statistically significant increase in entering student high school GPA
    - Solid track record of increasing record enrollment and college-wide growth for over 15 years
    - Developed numerous data analysis tools
    - Enrollment success has enabled college-wide financial stability and expansion
    - Expanded and linked scholarship awarding to admissions to yield the very best students
- **Fundraising**
    - Developed and executed the college's first $10 million campaign exceeding goal by over $1 million and concluding the campaign two years early
    - Personally cultivated relationships that led to the two largest individual gifts of $2 and $1 million
    - Redeveloped the non-profit Foundation Board of Directors into a vibrant group of volunteers
    - Significantly expanded the number of charitable remainder trusts, estate, gift annuities, and major gifts
    - Developed major events, galas, celebrations, and parties that each raised considerable funds ranging from $25,000 to $45,000
- **Facility Development**
    - Established five Foundation wholly-owned affiliate non-profit companies to assist with land donations and development projects
    - Established the Alumni House and Conference Center used for alumni, dignitaries, visiting faculty, and staff by raising over $150,000 to renovate the former President's house
    - Secured $27 million in tax-exempt bonds for the 305-bed, suite-style LEED silver residence hall
    - Anticipate $40 + million in profit to return to the campus via scholarship support and campus enhancements over the life of the ground lease from the Foundation's affiliate owned suites
    - As the Executive Director, was the owner's representative during design, development, and construction of the residence hall suites

Was lead developer in joint venture wind turbine with New York Power Authority (NYPA). $7 million 1.8 MW turbine has obtained $1 million in grant support
    - Organized effort with alumni to establish the SUNY Canton Subaru Distributors Corp training center that will yield $500,000 in support
- **Public Relations**
    - Redefined brand developing three branding campaigns
    - Improved quality of print and electronic publications
    - Increased frequency of distribution of major college marketing, image pieces, and press releases
    - Expanded utilization of social media
- **Athletics**
    - Transitioned from NAIA to USCAA to obtaining provisional NCAA division 3 membership
    - By linking admissions and athletic efforts doubled the number of student athletes in three of the last four years
    - Added four additional varsity team sports

PAID LEAVE OF ABSENCE – May 2003 to May 2004
Syracuse University

Ph.D. Student in the Higher Education Program

- Completed 27 credits and required residency towards degree
- Graduate Assistant in the Center for Retention Studies
- Subsequently
    - Completed coursework 12/2008
    - Passed comprehensive exam 4/2009
    - Dissertation proposal approved 5/2012
    - Dissertation defense and degree anticipated –April 2015

DEAN OF ENROLLMENT MANAGEMENT - May 1998 to May 2003
SUNY Canton

- **Chief Enrollment Administrator** – (Admissions, Financial Aid, and Career Planning/Placement). Served on the President's Leadership Council. Supervised the Director of Financial Aid, Associate Director of Admissions, and Director of Career Planning and Placement. Responsible for enrollment planning, marketing, budget management, recruitment, awarding aid, hiring, training, supervision, publication/image co-development, travel planning, enrollment statistical analysis, and telecounseling.

  Major Accomplishments

  - Full-time student growth average of 22%
  - Co-directed a major website upgrade
  - Established recruiting territories
  - Improved image and customer service
  - Two largest first-year classes
  - Created enrollment tracking
  - Create one-stop service center
  - Developed TV/radio/print advertise

- Quadrupled student visits to campus
- Created international scholarships
- Secured $50,000 for student aid leveraging
- Developed retention analysis
- Initiated an electronic filing system
- Assisted to create an extension site

ACTING VICE PRESIDENT FOR STUDENT AFFAIRS – November 2002 to January 2003
SUNY Canton

- **Chief Student Affairs Officer** – Reported to the President. Advocate for students and the Division while supervising: Admissions, Dean of Students, Residence Life, Diversity, Financial Aid, Greek Affairs, Orientation, Health Services, Campus Activities, Athletics, Campus Ministries, Special Events, Counseling, Career Services, and University Police.

DIRECTOR OF RESIDENCE LIFE - August 1995 to May 1998
SUNY Canton

- **Residential Life Program Administrator** - Responsible for the entire operation, including: budget management ($2.3 million), marketing, policy development, capital planning, co-curricular programming, implementation/integration of student development, resident assistant selection/training, purchasing agent, student combination/security and maintenance liaison. Developed an academic immersion program to assist "high risk" students in a living/learning environment.

- **Supervisor of Live-In Professional Residence Hall Directors and Clerical Staff** - Responsible for the hiring, training, daily supervision, and evaluation of the four live-in professional staff members and professional secretary. The overall staff consisted of 4 Residence Hall Directors, 1 Secretary, 36 Resident Assistants, 50 Office Workers and Door Attendants, housing between 750 and 1,100 students. July 1994 to May 1998.

- **Advisor to Residence Hall Judicial Board** - Formation, training, and advising of a student run judicial process designed to aid in community development, self-rule, and student participation. August 1993 to May 1998.

- **Coordinator of Greek Affairs** - Responsible for the development and coordination of the Greek Life program including: leadership training, advisor program, Greek Council advising, and annual chapter evaluations. January 1988 to May 1998.

DIRECTOR OF HOUSING
ASSISTANT DIRECTOR OF STUDENT LIFE - January 1988 to July 1995
SUNY Canton

- **Coordinator of Student Orientation**

- **Supervised Live-In Part-Time Residence Hall Directors**
- **Coordinator of Campus Student Voluntary Service**

RESIDENCE HALL DIRECTOR - June 1985 to January 1988
SUNY Canton

EDUCATION

DOCTOR OF PHILOSOPHY, Syracuse University - Higher Education, anticipated degree 2015
Coursework complete, passed comprehensive exams, dissertation submitted for review with defense anticipated in April 2015. Received one-year paid leave of absence to start. Dissertation interest: Baccalaureate Attainment via the Associate Degree
Syracuse University, Syracuse, New York

MASTER OF EDUCATION, General Studies, 1991
St. Lawrence University, Canton, New York

BACHELOR OF SCIENCE, Business Administration, Additional concentration in Religion/Philosophy, 1985
Roberts Wesleyan College, Rochester, New York

ASSOCIATE IN APPLIED SCIENCE, Business Administration, 1983
SUNY Canton (Agricultural and Technical College at Canton), Canton, New York

PUBLICATION(S)

Smith, C., Barrett, L., Gerlach, D., Goodrich, D., & Rose, P. (2003). Joint Marketing and Student Recruitment: The State University of New York University Colleges of Technology Experience. *College & University (C&U), 78*(3).

COMMITTEES & BOARDS SERVED

- Canton Chamber of Commerce Board of Directors
- Canton Central School District Shared Decision Making Committee
- College Association Board of Directors
- University Colleges Marketing and Enrollment Management Team
- Retention Committee Chair
- Spiritual Life Committee
- Alcohol and Other Drug Task Force
- Greek Council Scholarship Award Selection Committee
- Orientation Committee Chair
- SUNY-Wide Banner Functional Area Users Group
- Honor Scholar Selection Committee

PERSONAL INFO/HOBBIES

- Married to Lisa K. Gerlach – AAS Nursing – SUNY Canton, BA Psychology - SUNY Potsdam, AAS Business SUNY Canton, High School Nurse
- Two children - Joshua (25), Kayla (22)
- Enjoy: fishing, baseball, golf, football, cars, trap shooting, music, computers, genealogy, current events, and history