HIGHER EDUCATION AND SOCIAL INEQUALITY: THE ROLE OF COMMUNITY COLLEGES

by

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Abstract

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By

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There is a consensus among sociologists that educational attainment is one of the most important influences on individuals' life chances. Despite a flowering of research on community college effects since the 1970s, there is less agreement over the effects of community college attendance than there is for four-year college attendance. Using nationally representative longitudinal datasets, the NLSY79 and the NELS:88, new statistical methods, and a broad range of outcomes, this dissertation reexamines the lengthy debate about the influence of community colleges in perpetuating a cycle of diminished educational and occupational attainments. This study is also the first to ask whether community colleges produce payoffs across the generations.

This dissertation makes several novel contributions to research on community colleges. Because community college students take longer to complete degrees, I follow students for more years than previous studies. In addition to regression models, I use a statistical technique known as the Counterfactual Model of Causal Inference. This technique is considered superior to regression analysis in its treatment of selection bias. I will test whether some of the negative effects attributed to community colleges have been

overestimated due to failure to control adequately for the characteristics of students. I compare community college students to both four-year college students and high school graduates. Finally, I include outcomes rarely or never before examined in relation to community colleges, outcomes that have important implications not only for individual opportunity but also for opportunity in the succeeding generation: household income, wealth, family formation, parenting practices, and the educational progress of children of attendees. I will pay particular attention to whether community college effects differ by gender, ethnicity, and socioeconomic status.

Analyses suggest that the impact of community colleges is more complex than simplistic debates would lead us to believe, producing important benefits for enrollees as well as their children. Overall, I find that community colleges can be an inexpensive and flexible route to long-term upward mobility.

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Chapter One
Introduction

> "More than ever before, the American dream of upward mobility through education depended upon the fate of the millions of students in the nation's community colleges" (Brint and Karabel 1989, 103).

There is a consensus among social scientists that educational attainment is one of the most important influences on an individual's life chances. Beginning with the status attainment models of the 1960s and 1970s, researchers have modeled the direct and indirect ways that an individual's education improves earnings and occupational status (Blau and Duncan 1967, Duncan et al. 1972, Sewell and Hauser 1975, Hauser and Featherman 1977, Rosenfeld 1978, Warren, Hauser, and Sheridan 2002). Over the years, numerous studies have documented the growing importance of education, particularly higher education, for individual occupational attainments (Kingston et al. 2003, Krueger 2000, Bauman and Ryan 2001, Day and Newburger 2002, Ashenfelter and Krueger 1994).

Studies show that higher education influences a wide range of outcomes beyond individual occupational attainments. College educated people have higher household incomes and greater economic resources such as home ownership, savings, and stocks (Lavin and Attewell forthcoming, Conley 1999). Women with college educations have higher rates of marital stability, more educated spouses or partners, and delay childbirth (Barber 2000, Marini 1984, Sweeney 2002, South 2001, Axinn and Thornton 1992, Smits 2003, Blackwell and Lichter 2000, Lewis and Oppenheimer 2000, Mare 1991).

Parents' college education also improves outcomes in the second generation. Social scientists have demonstrated a correlation between parent's education and children's educational attainment and adult socioeconomic status (Blau and Duncan 1967, Duncan, Featherman, Duncan 1972, Sewell and Hauser 1975, Featherman and Hauser 1978, Becker 1981, Becker and Tomes 1986, DiMaggio 1982, 2001, Corcoran et al. 1992, Haveman and Wolfe 1994, Parcel and Menaghan 1994, Farkas 1996, Duncan and Brooks-Gunn 1997, Hertz 2005, Attewell and Lavin forthcoming).

Most of these empirical studies took "college" to mean a four-year college. There were several reasons for this. Before the 1980s, community college[1] students represented a relatively small percentage of college enrollments. Large datasets such as the U.S. Census did not distinguish between some college and the associate's degree until 1992, making any separate analysis of the AA degree impossible. Nor could the Census distinguish between some education at a community college and some education at a four-year college. Furthermore, many consider the bachelor's degree the minimum prerequisite for a decent-paying job.

Millions of students now converge on community colleges each year, hoping to improve their life chances. In the academic year 1999-2000, 42% of all undergraduates began their educations at public two-year institutions, or community colleges (Dougherty 2002, Horn et al. 2002). According to Rouse (1994), one-third of all high school graduates will attend a community college at some point in their lives. The tremendous expansion in higher education during the latter half of the 20th century has occurred even more dramatically at the two-year college level. Enrollments in these colleges have

[1] I will use the terms junior college, community college, and two-year college interchangeably.

increased 369% since the mid-1960s, exceeding growth at four-year colleges during the 1970s and 1980s (Bryant 2000, U.S. Department of Education 2003).

More importantly, disadvantaged students in particular rely heavily on community colleges for access to higher education. Many attend for the low tuition and geographical convenience; others have no choice due to low SAT scores or lack of success at a four-year college (Cohen 1990). As a result, lower income students, students of color, immigrant students, women, former welfare recipients, students with weak prior academic preparation, and first-generation college students are disproportionately enrolled (McCabe 2003). Approximately half of Black and Hispanic students enter college at the community college level (Nora 2000). Nearly half of community college entrants are academically under prepared for college level work (Sax et al. 2000). Community college students are also older, more likely to enroll part-time, and face added burdens from working full-time and supporting dependents while enrolled in college (U.S. Department of Education 2003).

This surge in community college enrollments, and the disproportionate enrollment of disadvantaged students, has prompted social scientists and policy makers to examine the effects of attending these schools on educational attainment and socioeconomic status. Despite this flowering of research, however, there is less agreement over the effects of two-year college attendance than there is for four-year college attendance.

This body of research led to two divergent views. Over the last 30-40 years, community colleges have received more criticism than praise. A “social reproduction” perspective considers the community college a façade, designed in fact to limit opportunity and protect elite colleges from the masses while keeping the illusion of an

open society intact. Referred to by some as "high schools with ashtrays,"[2] community colleges have been charged with perpetuating class inequality by "cooling out" educational aspirations and preparing predominantly lower-stratum students for mediocre jobs, keeping preexisting social inequalities intact.

Supporters credit community colleges with dramatically increasing access to college for students previously excluded from four-year colleges and with improving economic chances by teaching important technical skills. The community college, in this view, represents the American dream, opening our stratification system and offering a great avenue for upward mobility and a "second chance."

This dissertation reexamines the lengthy debate about the influence of community colleges in perpetuating a cycle of diminished occupational attainments. I include outcomes rarely or never before examined in relation to community colleges – ones that have important implications not only for individual opportunity but also for opportunity in the succeeding generation: household income, wealth, family formation, parenting practices, and the educational progress of children of attendees. This study is also the first to ask whether community colleges produce payoffs across the generations.

The need to evaluate the effect of community colleges on a broad range of outcomes is increasingly apparent. The higher education system in the United States is highly stratified by level of institution, two- or four-year (Karen 2002). We can no longer speak of general higher education effects. Information about the payoffs to the different sectors of higher education is particularly important for disadvantaged students, who

[2] Discussed in Bowles and Gintis (1976), p. 212. For similar sentiments, see also Stanfield (1997) and Etzioni (1970).

receive less information about promising fields or labor market demands (McDonough 1997, Rosenbaum 1976).

The question of whether community colleges can provide mobility for students who may not have the income or academic preparation to enroll directly into four-year colleges has important implications. If community colleges have unmeasured benefits, such as increasing household resources or improving outcomes for the second generation, this can shift the perception of community colleges away from their perception as "high schools with ashtrays" or "dumping grounds" for students not worthy of attending four-year colleges.

This research has implications for poverty policy as well. According to Grubb (1996), federal, state, and local policies tend to neglect the sub-baccalaureate sector of higher education. It is current policy instead to provide the poor with quick training, often leading to low paying and low skilled jobs. This became more formalized after the 1996 welfare reforms (Allen 1998, Jenkins and Fitzgerald 1998). Efforts to improve employability through short-term job training do not guarantee the elimination of poverty. Furthermore, it is shortsighted and does not guarantee that children will become upwardly mobile. Childhood poverty is detrimental to children's schooling outcomes (Duncan and Brooks-Gunn 1997, Haveman and Wolfe 1994, Mayer 1997, MacLanahan and Sandefur 1994). If research shows that community colleges are successful in increasing individual occupational attainments of enrollees, as well as sufficiently improving the life chances of their children, then community colleges can occupy an important place in poverty programs. Rather than ensuring that children inherit their

parents' class position, community colleges may play an important part in enhancing long-term intergenerational upward mobility.

Dissertation Overview

Two nationally representative longitudinal datasets provide the point of departure for the study. The National Longitudinal Survey of Youth 1979 Adult File (NLSY) follows students for an average of 20 years, from 1979 to 2000. This allows me to track students for a longer time than datasets used in prior studies of community college students, even those that used the NLSY79. This is important for studies of community college effects because students tend to enroll in college later in life and take longer to complete degrees. Data on earnings also comes from jobs respondents hold in their thirties and forties, rather than shortly after college. The National Educational Longitudinal Study (NELS:88) provides information on a more recent cohort of students.

This study also makes a methodological contribution to community college research. In addition to traditional regression, I use a relatively new statistical technique known as the Counter-Factual Model of Causal Inference or "propensity models" (Rosenbaum and Rubin 1985). Although there is overlap in student characteristics between community college and four-year college students, those who enroll in community colleges are more likely to be female, to come from minority ethnic groups and low-income families, to lack sufficient academic preparation, and to be first-generation college students. These selection effects could account for observed differences in educational attainment and earnings unless adequately controlled, as is done in the propensity model. The use of new statistical methods may diminish the gaps

in occupational attainments found in previous studies. These methodological issues will be discussed more fully in Chapter 2.

In Chapter 3, I reexamine debates that began in the 1970s and 1980s about the negative effects of community college attendance on educational attainments and job rewards. Some 30 years have passed since many arguments were first advanced, and it is important to reexamine community college effects in our current economic conditions. Community colleges were just beginning to expand at that time and their effects could not yet be measured. Furthermore, many criticisms came during a time of diminished returns to higher education and critics could not know that the economy would increase its demand and payment for higher education and all kinds of technical skills (Grubb 1999a). By using a longer-term dataset, I can test whether the earnings of community college entrants deteriorated over time relative to four-year entrants, as some community college critics predicted. I also ask whether it pays to attend a two-year college, relative to having no postsecondary education. It is important that high school students have information about the relative benefits of these options, especially for low-income students and students of color, who already receive less information from parents, teachers, and guidance counselors.

In Chapter 4, I add to the discussion of community college effects by examining some economic outcomes that have not been commonly studied, but that have important consequences for well being: household income, home ownership, and other economic assets. Outcomes such as these may be as or more important than earnings or occupational prestige in influencing quality of life and the resources available to offspring.

In Chapter 5, I contribute to the discussion of social and economic mobility by examining outcomes pertaining to the educational progress of children of attendees. Although critics criticize community colleges for reproducing social inequality, studies that have looked at the intergenerational benefits of college attendance have not examined the separate effect of community colleges. I will examine the following children's outcomes: cognitive test scores, behavior in school, college preparatory curriculum, and college attendance. Since children are too young to have their own measures of socioeconomic status, I am considering their educational histories as signs of future upward mobility. I will also explore home environments such as cognitive and emotional stimulation and marital/fertility behaviors. This will not only contribute to our understanding of community college effects, but also more broadly to our understanding of higher education and social mobility. Attewell and Lavin (forthcoming) argue that an appropriate measure of success for mass higher education should not just be the earnings and occupational attainment of those who get into college, but also whether, by going to college, students from underprivileged backgrounds break the cycle of disadvantage and lift their children into the middle class.

Before turning to the major theories used to assess community college effects, I will provide background information on the development, expansion, and current state of community colleges in the United States.

Background on Community Colleges

The Early Years

Junior colleges, as they were originally called, have their roots in the early part of the 20th century (Cohen and Brawer 2003). They began as extensions of high schools, the first in Chicago (Eells 1931, Zwerling 1976, Brint and Karabel 1989). William Rainey Harper, the founding president of the University of Chicago, developed a plan to separate the first two years of college from the second two years. Modeled after the German "gymnasium," "junior colleges" would teach college preparatory material, leaving the university to teach more advanced level courses. Although this idea appealed to other university administrators at Berkeley, Stanford, and Johns Hopkins, it did not catch on. Harper did succeed in dividing the college into lower and upper divisions (called the junior and senior college), and high schools in Joliet, Illinois expanded to offer college courses.

In 1910, the first separate junior college opened in Fresno, California. It offered college-parallel courses until 1917, when new state legislation allowed the college to offer courses in mechanical and technical arts. Additional independent junior colleges opened in Illinois, Michigan, and Missouri. Although they soon spread to other states such as Iowa, Texas, Kansas, Oklahoma, and Mississippi, junior colleges continued to enroll only a small number of students.

Expansion

Community colleges saw an unprecedented growth in number of institutions and student enrollment during the 20th century. During the first half of the century, new child labor laws and increased high school graduation rates fueled the expansion of college enrollment. Ultimately, the ideology of education as the route to upward mobility provided the main push to go on to college (Levine 1981). Because community colleges were less expensive to operate, they were more able than four-year institutions to absorb new students.

The first major surge in enrollments occurred after World War II, fueled in part by The GI Bill that gave veterans a tuition voucher. Enrollment doubled between 1944 and 1947 (Kane and Rouse 1999, 64). Before the war, community colleges had been concentrated in well-established states such as California and Texas, and were relatively absent in the northeast. Community colleges were now enrolling 10% of college students (Brint and Karabel 1989, 71).

Junior colleges, or community colleges as they were now being called (attributed to A.J. Cloud), continued to expand, spreading to every state and to urban areas such as New York (Witt et al. 1994, Witt 1988). By the late 1950s, community colleges were enrolling 25% of all freshmen (Medsker 1960, 13). They had become an important part of the nation's higher education system.

Another surge in enrollments occurred during the 1960s and 1970s, mainly due to the college enrollment of baby boomers, Vietnam veterans, and those avoiding the war. Enrollment in community colleges quadrupled and the number of institutions doubled (Witt et al. 1994). By 1968, every state except Nevada had a junior college. Although

enrollment growth slowed slightly during the 1980s and 1990s, scholars predict another increase in enrollments between 1996 and 2008 (Bryant 2000). Several factors are expected to contribute this increased enrollment, including a baby boom echo (Gerald and Hussar 2000), immigration (Bailey 2002), and the phasing out of remediation at four-year colleges in states such as New York, Florida, Georgia, and California (Arenson 1998a, 1998b, Healy 1995a, 1995b, Lively 1993).

By the end of the 20th century, community colleges enrolled roughly 40% of all college students and 42% of first-time fulltime freshman (Hoachlander et al. 2003, Dougherty 2002, Bryant 2000, Snyder 2002). Enrollment was stable at around 5.5 million a year during the late 1990s (AACC 1999, Bailey 2002, Coley 2000). Another 5 million enrolled for non-credit courses in 2000 (Coley 2000). Two-year colleges numbered 1,600 (Coley 2000) and comprised over one-quarter of all higher education institutions (Dougherty 2002). Community colleges now exist in every state. There was a shift to public control as well. All of the first eight junior colleges were private in the early part of the 20th century (Gleazer 1961, Zwerling 1974), compared to only 5% by the end of the 20th century (NCES 2001).

Vocationalization of the Curriculum

> "Increasingly, it seems, the community college has become a vocational-training institution, more and more divorced from the rest of academia, with potentially serious consequences for the life-chances of its students" (Brint and Karabel 1989, 12-13).

Perhaps the most important change to occur in community colleges during the last century, and the one that has sparked the most controversy, has been the movement

towards the vocational function. Originally focused on the transfer function, community colleges have since broadened their mission to include terminal vocational education, continuing education, remedial coursework, workforce development, customized training, special interest courses, and community service (Cohen 1990, Cohen and Brawer 2003).

Colleges had always functioned to prepare students for jobs, although external forces during the early part of the century contributed to the vocationalization of community colleges. Employers moved away from apprenticeships and on-the-job training (Striplin 2000). Land grant colleges moved away from vocational education. The National Vocational Education (Smith-Hughes) Act of 1917 split academic and vocational curricula in high school. Vocational education acts passed in the 1930s and the 1963 Higher Education Act gave federal money for vocational programs (Zwerling 1974). Since community colleges provided two years of college instead of four, it made sense that they attracted students with practical short-term goals (Cohen 1990).

Despite institutional efforts, early community college students were not interested in vocational education. Transfer rates and vocational enrollment remained low and stable until the 1970s (Brint and Karabel 1989). Several factors contributed to a surge in vocational enrollment, including institutional changes and market forces. For the first time since the Depression, relative demand for college graduates fell (Freeman 1976, Rumberger 1984), although this fact may have been exaggerated (Romano 1986, Brint and Karabel 1989). The promise of immediate employment, combined with the wide variety of vocational programs offered at community colleges at low cost, boosted vocational enrollment during this period of slow economic growth and rising

unemployment, (Romano 1986). The sub-baccalaureate curriculum was now formally divided into academic and vocational (Choy and Horn 1992, Levesque et al. 2000). Suddenly students were being turned away from popular vocational programs such as nursing.

Today, although many aspire to transfer to a four-year college, the majority enrolls for practical vocational reasons (Vorhees and Zhou 2000). Nearly all community colleges provide vocational education and enrollment has remained high and stable, making it the predominant function (Dougherty 1994). By the late 1980s and 1990s, two-thirds to three-fifths of students were enrolled in occupational programs, compared to 25% in 1970 (Cohen and Brawer 2003, Grubb 1996, Batt and Osterman 1993, Grubb 1989, Rosenbaum 2001). The number of associate's degrees awarded in occupational areas increased from 45% in 1970 to 70% in the 1990s (Schuyler 1999, Cohen and Brawer 2003).

By the end of the century, two-thirds of associate's degrees were enrolled in just four fields: health, business, protective services, and engineering-related technologies (AACS 1999, 64-65). A large percentage, 18%, is receiving computer or technical training (Lords 2000). Women were five to eight times more likely than men were to receive a degree in health services, while men were five to eight times more likely to receive a degree in engineering and other technologies (Adelman 2004).

Many community college students are non-credit students who enroll to upgrade occupational skills; some put the figure at 40% (Bailey 2002, Phillippe and Valige 2000). There is also an increase in reverse transfer students, students who have already completed or enrolled in four-year institutions and are returning to associate's degree

programs for specialized training, to investigate a new career, or to take special interest courses (Quinley and Quinley 1998, Marchese 1999, Townsend 2000.

Today's community colleges can be described as having "multiple missions," leading them to be called "shopping mall colleges" (Bailey and Averianova 1999). Community colleges have broadened their economic development role to include contract training, small-business development, and local economic planning (Grubb et al. 1997). Contract training involves classes offered to employees of a business, industry, or labor union, mostly to help with a specific job but also to improve basic reading, writing, or math skills (Lynch et al. 1991). Their vocational emphasis makes community colleges natural subcontractors for government-sponsored training programs (Leigh and Gill 1997). They have also changed to meet global demands, such as investing in information technologies (Levin 2001). The community college is now responsible for educating the majority of the mid-skilled labor force (Bragg 1998).

Students

As community colleges expanded and became more vocationally oriented, they began to attract a different kind of student. These students were more likely to be attracted to an occupationally oriented education, rather than a classic liberal arts curriculum emphasizing philosophy, art, and the classics (Cross 1971).

Their lost cost and geographical convenience made them desirable to low-income students who could not afford four years of college, who had to work while in college, and who could not afford to live away from home (Grubb 1999b, Knoell and Medsker 1965, Astin 1983). This may seem expected, but in fact, early community colleges served

predominantly middle class students (Clark 1960). By the 1970s, three-fourths of community college students were from low-income to lower middle-income families. One-half of college students in the bottom income quartile go to community colleges (Allen 1998). Community colleges are increasingly important for former welfare recipients.

The vocational emphasis and flexible course schedules attract older students as well; more than a third of enrollment is over the age of 30 (Horn and Carroll 1996, Phillippe 2000). As older students, these students experience more role conflicts as fulltime workers and parents (U.S. Department of Education 2003, 66). There has been a huge increase in part-time students since the 1970s (Kane and Rouse 1999, NCES 2004a). Although older students and part-time students have driven much of the increase in enrollment (Cohen and Brawer 2003), Gerald and Hussar (2000) predict an increase in enrollment of traditional college-aged students and students enrolling fulltime.

The non-selective admissions standards at community colleges attract students who, due to low grades or test scores, were unable to enroll in four-year colleges or whose applications were unsuccessful, giving them a "second chance." Many find that nearly half of community college entrants are "academically under prepared" for college level work (Folger et al. 1970, Medsker and Tillery 1971, McCabe 2003, Astin et al. 1988, Hoachlander et al. 2003).[3] The percentage needing basic skills instruction is higher in community colleges than in four-year colleges. There is disagreement on the actual

[3] Researchers defined "under prepared" with students' SAT scores, rank in high school, and academic courses in high school. Using these indicators, as well as the NELS achievement test, Hoachlander and associates (2003) find that among the NELS:88 cohort, 39% of community college entrants had at least one risk factor for dropping out of high school, and 54% were at risk of not completing a postsecondary education. On the other hand, one-third of community college entrants were academically qualified to enter a four-year college.

figure, although this figure is expected to increase as states phase out remediation at four-year colleges.[4]

Community colleges have larger percentages of minority students than four-year colleges (Rendon and Garza 1996, Bryant 2000, Foote 1997, Nora 2000). Minorities represent 31.8% of community college students, up from 19.8% in 1976 (U.S. Department of Education 2003). Hispanics represent the largest share of minority students, followed by black students (Blau 1999, NCES 2004b).

Community college students are disadvantaged on a number of other dimensions. They are much more likely to be the first generation to attend college; more than half are first-generation (Horn et al. 2002). Community college students are slightly more likely to have a disability, more likely to speak a language other than English at home, and to have a GED (U.S. Department of Education 2003, 154). Women constitute 58% of community college enrollees (Phillippe and Patton 1999).

Given the overrepresentation of students from disadvantaged backgrounds, community colleges have serious consequences for social inequality. This also makes the use of adequate controls for background factors important when parceling out college effects. The average community college student is a non-white female, age 28, from a middle to lower socioeconomic background, and attending college part-time (Dial-Driver 1990). Community college students are more likely than four-year college students to delay enrollment after high school, to work fulltime while enrolled in college, and to attend college part-time (U.S. Department of Education 2003, 66, 154), making longer-

[4] Grubb and Kalman (1994) put the figure anywhere from 25-78% The NCES (1996) puts remedial enrollment at 41% (6, 10). Adelman (2004) found that the percentage needing remediation remained stable in community colleges since the 1970s (between 61-63%), while it dropped in four-year colleges.

term datasets necessary. Finally, the new vocational emphasis makes the examination of labor market outcomes vital.

Theoretical Perspectives

Over the past four decades, community colleges have been the subject of much debate. Critics have seen them as the linchpins of social inequality, while supporters have seen them as engines for social mobility, advancing the American dream. A source of these different evaluations is that they differ in their choice of comparison group; critics tend to compare community college students to four-year entrants, while supporters compare community college entrants to high school graduates. In this section, I discuss these two theoretical perspectives and the empirical evidence used to support each perspective.

The Social Reproduction View

> "It is the community college's 'operational specialty' to transform transfers into terminal students" (Clark 1960, 146).
>
> "The community college, generally viewed as the leading edge of an open door and egalitarian system of higher education, is in reality a prime contemporary expression of the dual historical patterns of class-based tracking and of educational inflation" (Karabel 1972, 526).

Community college critics drew from an influential 1960 article by Burton Clark. Although he was not advancing a social reproduction argument, Clark argued that community colleges "cooled out" educational aspirations with a variety of intentional and unintentional practices. Based on his study of San Jose City College, Clark identified several strategies used by community colleges to cool out students. Before students enter,

they are given tests that place some into remedial courses, sending the message that they are not transfer material. Counselors encourage students to enroll in terminal vocational tracks and take courses that do not carry transfer credits, and counselors provide little information about transfer requirements. If they are defined as latent-terminal students, counselors help students find programs that are more "realistic." If they do not take the advice, they may be given warning notices or put on probation, other techniques used to signal students that they are not transfer material

To Clark, the problem originates from the fact that community colleges continue to adhere to high standards of performance, even though students cannot live up to these standards. "Cooling out" results when "the conflict between open-door admissions and performance of high quality often means a wide discrepancy between the hopes of entering students and the means of their realization" (Clark 1960). As opposed to the "hard denial" of academic dismissal, these forms of "soft denial" reconcile students' hopes for mobility with the reality of their likely destinations, making structural failure look like individual failure (Clark 1960).

Beginning in the 1970s, social reproduction theorists introduced a class dimension to Clark's findings (Karabel 1972, Brint and Karabel 1989, Pincus 1986, 1989, and Bowles and Gintis 1976). According to a conflict or social reproduction perspective, schools are linked to the capitalist system and prepare workers for various sectors of the labor market determined by their socioeconomic background (Aronowitz and Giroux 1985, Bowles and Gintis 1976). In this view, schools maintain the status quo rather than providing opportunities for mobility.

In contrast to Clark's interpretation, community colleges were not just a gentle way of managing rising educational aspirations, nor did the conflict derive from a clash between less prepared students and high institutional standards. According to critics, the occupational structure could not offer the opportunities that people were clamoring for; therefore, structural inequality had to be turned into individual deficiency. Institutions such as the community college deflect resentment by "managing ambition" (Goffman 1952, Merton 1957). Rather than *denying* access, denial is *delayed*. In order to maintain the ideology of equal opportunity, students are given the option to attend a community college. Linking the growth of the community college to the demands of the capitalist economy, Bowles and Gintis (1976) argue that community college students are "programmed for failure" in order to be brought in "line with the realities of the job market" (211).

Early junior college supporters were interested in preserving "pure" four-year colleges catering to elite students. Based on California's Master Plan (100% access through three tiers of colleges), many states were motivated by the desire to divert the expansion in college enrollment from their more prestigious institutions, forming new hierarchical models of higher education (Medsker 1960, Zwerling 1974). Community colleges could protect four-year colleges from the "masses" (Karabel 1972, Brint and Karabel 1989, Zwerling 1974). In Zwerling's (1974) words, administrators anticipated that, if too many students got in, they must "coerce" them away from four-year colleges, even if it's "difficult and dangerous", and quickly to avoid "clamor and controversy" (33).

According to critics, community colleges are in fact the ultimate example of social reproduction in education because they prepare predominantly lower socioeconomic students for work in the less rewarded sub-baccalaureate labor market (Brint and Karabel 1989, Pincus 1986, Velez 1985, Alba and Lavin 1981, Nasaw 1979, Bowles and Gintis 1976, Zwerling 1976, Pincus 1974, Karabel 1972). Community colleges were thus a key mechanism for perpetuating class inequality, a vital component of a class-based tracking system (Karabel 1972).

Community colleges, particularly their vocational programs, reinforce our class structure by leading to dead-end jobs with little chance for promotion and leaving students with few transferable skills (Pincus 1979, 1980, 1986). The jobs may pay highly in the beginning, but they offer few opportunities for advancement (Pincus 1979). Furthermore, community college programs teach narrow skills, making it more difficult for graduates to move up or out of jobs and to adapt to new technologies. Sub-baccalaureate jobs may also be more cyclical and more sensitive to economic downturns (Grubb 1996). According to Zwerling (1974), "The expansion of vocational education…is more an ingenious way of providing large numbers of students with *access* to schooling without disturbing the shape of the social structure than it is a method for democratizing America" (p. 32, italics his). In fact, community colleges have been notably unsuccessful in retaining their students and in reducing class inequality (Karabel 1972).

Community colleges began to seek out those most likely to enroll in vocational programs, such as working class young adults, older students, and students interested in attending college part-time. According to the Truman Commission Report (1947), the

junior college would draw students away from four-year colleges, filter out the ones capable of transferring, and provide terminal vocational education for those who were not capable of transferring (Brint and Karabel 1989, 69). Colleges later dropped the term "terminal" due to its negative connotations. Vocational programs were nicely packaged so students would choose them on their own (Dougherty 2002, Grubb 1999a). Vocational and entrepreneurial activity is high in areas that serve large numbers of minority students (Dougherty 1994).

There has been little change in economic and social class mobility for minorities because their curriculum choices have been so concentrated in career-vocational areas (Richardson and Bender 1987, Karabel 1972, Cross 1971). Community colleges are the lowest track in higher education, and vocational is the lowest track within the community college (Pincus 1986).

Working class and minority students are more vulnerable to vocational counseling and media portrayals of dismal prospects for college graduates. "More and more working class and minority students want to use college as a way up the ladder, while [vocational supporters], knowing that there is not much room at the top, want to convince them to lower their aspirations and redefine their goals" (Pincus 1980, 356). This is called the "hidden curriculum" (Brint and Karabel 1989). The desire to limit enrollment in the four-year colleges is still alive in California and New York (Trombley 1991).

The "business domination model," as was believed by Marxian theorists, argued that community colleges were being controlled by local businesses. In contrast, others argued that community college leaders courted business in order to forge a unique institutional status, a perspective known as "new institutionalism" (Brint and Karabel

1989, Dougherty 1994, DiMaggio and Powell 1983). Tired of feeling like inferior alternatives to four-year colleges, junior college administrators turned to the vocational function as a way to find a separate and worthy identity. Throughout the early 20th century, junior college leaders such as Koos, Eells, and Campbell, formed a professional association, gave talks, published reports, surveyed local businesses, and developed techniques designed to encourage students to enroll in vocational education. In 1920, the American Association of Junior Colleges (AAJC) advocated entrepreneurial activities to create a new image and increase prestige (Brick 1963, Zwerling 1974). The Carnegie Report, published in 1932, advocated that community college administrators tailor programs to local labor needs, train guidance counselors, and improve job placement by connecting to local employers. In fact, businesses ignored community colleges until they became too big to ignore in the late 1950s and early 1960s (Brint and Karabel 1989).

There were also strong financial pressures to vocationalize, as state funding declined or leveled off, community colleges had to look to workforce development as a source of income (Bailey and Averianova 1999). Since the 1970s, community colleges have become more and more tied to local businesses (Grubb 1984). Vocational programs got new support by being cost-effective. They were made to seem modern and exciting by associating them with new industries such as aerospace. Community colleges pursued new cooperative arrangements such as customized contract training for casinos in New Jersey and provided mechanics for GM (Pincus 1986). Leaders made presentations to high schools, formed partnerships with high school counselors, sent out promotions in the mail.

Whether community colleges courted businesses, or the other way around, students and their parents were finally interested in vocational programs (Lombardi 1978, Cohen and Brawer 2003, Medsker and Tillery 1971). This movement towards vocationalization has concerned critics the most. By dividing vocational and academic programs, community colleges are no longer fulfilling their original transfer mission, nor are they providing a quality education (Jacobs 2001, Hunt et al. 1977, Palinchak 1973, Path and Hammons 1999). Some critics fear that these new activities have moved the community college from being an institution focused on educating students to one centered on meeting the needs of business and the local economy (Dougherty and Bakia 1999, Dougherty 1994, Grubb et al. 1997). Students in vocational programs, and particularly those enrolling through business partnerships, are isolated from other students and other course offerings. Dougherty (2002) calls this "corporate welfare." The separation of academic and vocational tracks was not in the students' best interests; rather vocational training filled labor shortages and prepared students for mid-level jobs (Pincus 1989). Cohen and Brawer (2003) put the transfer rate at a low 20-25%. The proportion of associate's degree holders in general studies, the classic transfer curriculum, fell during the 1980s but rose among a recent cohort of college students (Adelman 2004).[5]

In support of the social reproduction perspective, research in the 1970s and 1980s confirmed that students who entered community colleges had a lower probability of earning a bachelor's degree. According to Dougherty (2002), much of this lower educational attainment is due to lower income, poorer academic preparation, and lower education and occupational aspirations. However, even after controlling for all of these in

[5] According to Adelman (2004), 39% of associate's degrees were in general studies in the NLS72 cohort, compared to 30% in the HSB and 43% in the NELS.

a regression, students who enter community colleges are still 11% to 19% less likely to earn bachelor's degrees than students who enter four-year colleges (Alba and Lavin 1981, Breneman and Nelson 1981, Astin 1983, Anderson 1984, Velez 1985, Dougherty 1994, 2002, Whitaker and Pascarella 1994, Pascarella 1999, Berkner et al. 2000, Rosenbaum and Stephan 2005). In fact, high percentages of students fail to get any degree.

This may be because institutional features may discourage students from obtaining a bachelor's degree, even if they are successful in transferring to a four-year college, including difficulties in transferring credits, obtaining financial aid, and adjusting to the higher requirements of four-year colleges (Dougherty 1994, 2002). Low social and academic integration also contribute to low retention and transfer (Dougherty 1987, Tinto 1987, Napoli and Wortman 1998). Transfer students do not room with other new students and do not attend freshman orientations, further decreasing their integration and transition into college.

Mainly because they complete fewer years of schooling, students who *begin* their educations at community colleges earn less and have lower status jobs than students who begin their educations at four-year colleges. Researchers using the National Longitudinal Survey of the High School Class of 1972 (NLS72) concluded that starting college at the community college level lowered earnings and occupational prestige when compared to students who entered college at the senior college level, even though earnings gaps were small and only differences in occupational prestige were consistent (Monk-Turner 1990, Smart and Ethington 1985, Breneman and Nelson 1981).[6]

[6] When Breneman and Nelson (1981) found no earnings differences, they hypothesized that the earnings gap would widen over time due to the less steep promotion and raise structures of low-status jobs. I test this in Chapter 3 by following students almost 12 years longer than they did in their study.

However, the payoffs to the bachelor's degree are well known (Day and Newberger 2002). Graduates of four-year programs earn more over their lifetimes and BA degrees open the door to professional occupations (Romano 1986). Furthermore, the bachelor's degree is a prerequisite for entry to graduate programs, which lead to the most prestigious and lucrative jobs.

In summary, social reproduction theorists argue that community colleges were designed to protect four-year colleges from less prepared students and that they function as a class-based tracking system for higher education. They manage rising aspirations by depressing aspirations and attainments, leading to dead-end jobs, ensuring that children inherit their parents' class position while simultaneously retaining the myth of the American dream. Increasing access to higher education does not necessarily lead to a genuine expansion of educational opportunity. According to critics, education may have expanded, but social inequality was essentially unchanged.

When assessing the empirical evidence, one of the foremost scholars of community colleges, Kevin Dougherty (2002), feels that it falls on the side of the social reproduction school. The perspective advanced by social reproduction theorists is nicely summarized by Dougherty (1987): community colleges "…reproduce the class structure of our capitalist society by producing graduates trained and socialized for work in capitalist enterprises and by insuring that children inherit their parents' social-class positions." This sentiment can be found in the work of Karabel (1972, 523-524), Brint and Karabel (1989), Bowles and Gintis (1976), Pincus (1986), Nasaw (1979), and Zwerling (1976).

Community College Supporters

> "Community colleges are indeed untraditional, but they are truly American at their best, they represent the United States at its best. Never satisfied with resting on what has been done before, they try new approaches to old problems. They maintain open channels for individuals, enhancing the social mobility that has characterized America, and they accept that society can be better, just as individuals can better their lot within it" (Cohen and Brawer 2003, 36).
>
> "Most people don't realize the large role community colleges play in sustaining or increasing the educational attainment of the population" (Palmer 1998, 1)
>
> "No other institution has demonstrated so much flexibility in adapting to the community's needs" (Bailey and Averianova 1999, 5).

In contrast to the argument advanced by social reproduction theorists, Phelan (2000) argues that community colleges were, from the beginning, dedicated to providing access and education to the masses, representing a uniquely American success story. The creators and the public saw the junior colleges as "people's colleges," bringing education to the masses who were demanding higher education in the early part of the 20th century (Medsker and Trent 1964, Cross 1968, Cohen 1990, Witt et al. 1994). Clark Kerr, an architect of California's higher education system, called them the "great innovation in American higher education in the 20th century" (Brint and Karabel 1989, v). Early junior colleges served local communities and provided mobility for the children of farmers, shopkeepers, and artisans.

Critics and supporters differ in their view of community colleges as "diverting" or "democratizing" higher education. The thesis of "educational diversion" holds that proximity and low cost lures students away from four-year colleges, where they are pressured to major in vocational fields, thwarting their chances for transfer and lowering

overall educational attainments. Dougherty (2002) argues that the community college contribution to baccalaureate production is small because of its "diversion" effect, meaning that students are diverted away from four-year colleges because of the existence of community colleges. This largely cancels out its "democratizing" effect.

In contrast, supporters credit community colleges with dramatically increasing access to college at a low cost (Fields 1962, Medsker and Trent 1964, Cross 1968, Palmer 1998, Rouse 1998, Cohen 1990, Grubb 1999a, Pascarella 1999, Cohen and Brawer 2003). The thesis of "educational democratization" maintains that community colleges have increased the educational attainments of those who otherwise would *not* have gone to college. Due to their open admissions policy, low or no tuition, flexible class schedules, and wide geographic dispersion, many students would not have attended college were it not for community colleges (Fusch 1996, Grubb 1999a, Cohen 1990, Bryant 2000). Some community colleges do not even require a high school diploma (Kane and Rouse 1999). Supporters argue that slightly more than half of community college enrollees are non-traditional students who probably would not have attended a four-year college (Grubb 1989, Rouse 1995, 1998, Kane and Rouse 1999). States and localities with higher numbers of community colleges have higher rates of college going (Dougherty 1994, Grubb 1989, Rouse 1998).[7] Rouse (1995, 1998) and Leigh and Gill (2003) conclude that community colleges increase educational attainment (democratization), rather than decrease it (diversion).

Supporters argue that community colleges are the best places to deal with rising enrollment due to the baby boom echo and rising college aspirations (Rouse 1998, Pascarella 1999). They are cost-effective (Cohen and Brawer 2003). No other institution

[7] Critics argue that states could have instead opened new four-year colleges.

could meet such diverse demands as remediation, workforce training, academic transfer programs, and vocational programs (Dougherty 2002, Bailey and Averianova 1999, Cohen and Brawer 2003). In fact, in some states, community colleges are no longer playing a secondary role to four-year colleges (Glass and Bunn 1998).

Supporters also credit community colleges with diversifying American higher education. This role is expected to intensify over the coming decades (Fusch 1996, Nora 2000, Phelan 2000, Rendón 2000, Cohen 1990). Community colleges have been important for the enrollment of minority students, due to the low tuition and special recruitment and retention efforts. New students are from lower-income families, have lower academic ability, are older, and are more likely to enroll part-time. Many new students are also women. The high rate of part-time enrollment among those over the age of 20 provides evidence that community colleges allow those with work and family responsibilities to attend college (Bryant 2000). Institutional features allow older students to attend college while working full-time and taking care of children (Bryant 2000). They provide many with an opportunity to start over, a "second chance" due to low grades and test scores, lack of success at a four-year college, or welfare dependence (Jenkins 2002, Phelan 2000).

Critics and supporters also differ in their assessment of the effect of community colleges on labor market outcomes. Supporters credit colleges, particularly community colleges, with improving social mobility by teaching skills required by the current economy (Grubb et al. 1997, Grubb 1996, 1999a, McCabe 1998, Orr 1998, Alfred et al. 1999, Cohen and Brawer 2003). Rather than developing to filter students away from four-year colleges, supporters argue that community colleges expanded in response to

consumer demand and an increasing demand for skilled labor in technological and semi-professions, which require more education than high school, but less than a bachelor's degree. Occupations with the highest growth rates are those that require some education beyond high school but less than a bachelor's degree, occupations such as healthcare workers, technicians, and computer operators (Silvestri 1993, Grubb 1996). Furthermore, community colleges are often at the forefront of new technologies and have responded to globalization by forming partnerships with foreign businesses and providing services for international students (Levin 2001).

To supporters, no other institution has provided as broad a range of education and training for employment. The community college is now responsible for educating the majority of the mid-skilled labor force (Bragg 1998). Supporters see community colleges as leaders in workforce development (Schuyler 1997). In fact, Jenkins and Boswell (2002) report that 19 states have designated community colleges as the lead institutions for workforce training, and community colleges are prominent players in many other states. This is especially true given the rapid rate of technological change in today's economy (Alfred et al. 1999). Community colleges provide direct links to jobs through contracting and customized training (Mobley 2001, Dougherty and Bakia 1999, Grubb et al. 1997, Leigh and Gill 1997, Schuyler 1997, Lynch et al. 1991). Community colleges connect high school students to jobs through tech-prep, school-to-careers, and dual or concurrent high school/college enrollment programs (Jenkins 2002, Jenkins and Boswell 2002). Their localized nature makes them well suited to local labor market demands (Mobley 2001).

Community colleges can serve as important bridges for disadvantaged students to attend college and secure work. Rather than reproducing inequality, community colleges serve as some students' last best hope for postsecondary education, offering an opportunity to start over and increasing employability by improving job skills. Older students can upgrade skills through customized training; Bailey (forthcoming) estimates that 2.3 million are enrolled in such programs. Community colleges help disadvantaged people become self-sufficient by providing GED programs, basic skills programs, and ESL courses (Jenkins 2002). They can also lead to self-sufficiency for former welfare recipients (Phelan 2000, Jenkins 2002). They can serve local communities by contributing to local economic revitalization (Parnell 1985) and providing important revenue to states (Christopherson and Robison 2001, 2003). Community colleges offer a variety of programs to deal with social problems, such as job training in depressed areas and for the unemployed, as well as workshops on science and technology for girls (Stephenson 1995).

The prominence of vocational education at community colleges has generated the most controversy. Cohen (1994) expects career education to remain prominent because one of the community college's primary functions is to train workers. However, he expects the "collegiate" function (preparing students to enter programs leading to a bachelor's degree in health fields, business, technology, and the professions) will continue because entering these programs will require that students complete courses in English usage, math, humanities, and social sciences.

Others argue that vocational education is no longer necessarily terminal. Grubb (1984) found that 12% of students who enrolled in marketing, defined as a vocational

career, cited the bachelor's degree as their main goal. Many vocational programs offer a transfer option as well, rivaling liberal arts transfer figures (Bragg 1998). Vocational majors are no longer the sole domain of community colleges; four-year institutions are increasingly offering vocational programs as well. This means new competition from four-year colleges as well as for-profit companies such as DeVry (Bailey et al. 2003, Bailey 2002). It may also be more difficult today to categorize majors as either academic or vocational. Choy and Horn (1992) classify occupational or vocational majors as preparing directly for a well-defined occupation or for a broader education. The NCES defines a wider range of majors as "career majors," defined at the sub-baccalaureate level as majors that prepare students for semiskilled and skilled technical fields, such as engineering technologies, and for paraprofessional occupations (Hudson and Shafer 2004). According to this definition, while it is still more common at the associate's degree level, most students at *both* the AA and BA level are in "career" education: 71% at the AA level and 61% at the BA level (p. 2).

Finally, although the bachelor's degree leads to higher earnings than the associate's degree, some vocational fields lead to higher earnings than academic BA degrees (Attewell and Lavin forthcoming). Career programs also differ greatly in terms of pay; health care and electronic technology majors earn much more than clerical and data processor majors (Cohen 1990). Contrary to critics, Palmer (1986) did not find low-income students disproportionately located in the low paying career programs.

Because there are so many different reasons for attending, the effectiveness of community colleges is hard to assess. First-year students hoping to transfer or get a vocational degree, students needing remedial courses, older students returning to upgrade

skills or to get a degree, all converge on the community college each year. Supporters do not dispute that entering community colleges lowers students' chances of obtaining the bachelor's degree. Because community colleges are open-door institutions, enrolling virtually anyone for a wide range of reasons, it is expected that not everyone will complete a degree (Cohen 1990). According to Cohen (1990), only 36% say the primary reason they are attending is for transferable credits (428).

Despite low transfer rates, community colleges may also lead to other benefits, such as exposure to new ideas (Pascarella 1999). Eaton (1994) argues that two-year colleges display excellent collegiate quality. One study found the existence of a strong core curriculum (Zeszotarski 1999), although Dougherty (2002) questions this.

During the 1980s and 1990s, there was a shift in community college research. Researchers began comparing community college students to others in the sub-baccalaureate market. They found that earnings for community college graduates ranged from 9-27% higher than earnings for high school graduates (Grubb 1997, 1999a, Pascarella 1999, Leigh and Gill 1997, Lin and Vogt 1996, Kane and Rouse 1995, Marcotte et al. 2005).

State and local datasets confirm the benefits to sub-baccalaureate education relative to no postsecondary schooling, particularly when students complete an associate's degree or certificate, though effects vary from state to state. [8] They find that students benefit immediately from attending community colleges and predict that these benefits will increase over time, although these are short-term studies with few controls,

[8] Statewide studies match individual student data to Unemployment Insurance (UI) wage data using the Post-Education Employment Tracking System (PEETS) (Friedlander 1996). Studies have been conducted in California (Sanchez and Laanan 1998, Sanchez 1998, Laanan 1998, Sanchez et al. 1999), Texas (Froeschle 1991), Florida (Pfeiffer 1990), North Carolina (Vanderheydan 1994), and Washington (Seppanen 1990).

and are sensitive to local employment conditions. In one study, in their first year of employment, AAS (associate in applied science) degree holders in Florida had *higher* earnings compared to bachelor's degree holders (Pfeiffer 1990).

Echoing the sentiments of early junior college advocates, a new generation of community colleges supporters feels that we should not encourage all students to enroll in four-year colleges. The sentiment is similar to early advocates, although the motivation is more humanistic than elitist (Levey and Lavin 2005). Concerned for the well being of students, this new generation of community college supporters feels that too much emphasis is placed on getting a BA degree. In sharp contrast to the social reproduction theorists of the 1960s and 1970s, these theorists think guidance counselors are advising too many to enroll in four-year colleges and in transfer programs (Rosenbaum 2001). This position is summarized by Stanfield (1997): "Hundreds of thousands of young Americans will embark on college educations – only to find frustration, failure, and lots of debt, and the need…to learn something practical at a place without ivy (656)."

According to Gray and Herr (1996), the "one way to win" paradigm that emphasizes the bachelor's degree is dangerous, and leads to failure, disappointment, and debt. Students of "modest ability or uncertain motivation" should be advised instead to enroll in two-year occupational programs (Rosenbaum 2001, Wonacott 2003, Boesel and Fredland 1999, Gray and Herr 2000, Stark et al. (nd) Wonacott 2003, Harwood 1997, Stanfield 1997). According to Harwood (1997), community colleges have played a positive role in upgrading the labor force, and efforts to expand community colleges make more sense than advising a four-year college education for every child: "It's not 'BA or bust'." While they admit a bachelor's degree can be a good foundation for

success, pursuing a BA degree is a risky proposition for students without the "appropriate academic foundations." For these students, a technical certificate or associate degree may be a "wiser investment" (Wonacott 2003). To quote Boesel and Fredland (1999): "Based on the research, we believe that high school students of modest ability or uncertain motivation who are thinking of enrolling in four-years would be well advised to consider attending two-year colleges instead. If they did so, they would probably realize the same earnings and cognitive-skill gains at a lower cost and with less debt."

Social reproduction and functionalist perspectives have been treated in the literature as competing positions on community college effects. However, empirically, they do not speak directly to one another because each perspective employs a different comparison group; social reproduction theorists compare community college students to four-year college students, while functionalists compare community college students to high school graduates. I will address each of these perspective in my analyses. Furthermore, thirty years have passed since some of these arguments were first advanced and it is important to examine these issues with current evidence. Community colleges have experienced important institutional and demographic changes over the past three decades. When Clark (1960) was writing, students were no less privileged than students at four-year institutions, and most students majored in academic subjects hoping to transfer to four-year colleges. Today's students enroll for a wide variety of reasons, many looking to obtain short-term occupational skills. These students may be more compatible with the institutional features of community colleges; in some ways, there may be a better fit between the institutional character and students. However, students have also become

more disadvantaged, making an analysis of their economic well being a matter of great importance.

Research Questions

(1) Does entering college at the two-year college level lead to lower earnings and occupational prestige relative to students who enter at the four-year level, after controlling for background characteristics?

Early critics, rooted in the social reproduction perspective, argued that community colleges maintain class distinctions by lessening chances of BA attainment and therefore preparing students for work that ensured they would earn less than peers who entered four-year colleges. Therefore, they compared community college entrants to similar entrants at the four-year college level (see Dougherty 1994, Chapter 3, for a review of these studies). Following in the tradition of these influential studies, I test whether community college *entrants* earn less and hold lower prestige jobs than otherwise similar four-year entrants.

I contribute to this literature by controlling for background characteristics with two statistical techniques: regression and matching with propensity scores. The negative community college effect on earnings and occupational prestige may have been overestimated in the past due to failure to control for a wide range of student background characteristics. Furthermore, by using a longer-term dataset, the NLSY, I have better measures of occupational attainments than those used in previous studies, and I can finally test whether the earnings of two-year college entrants deteriorate over time in

relation to earnings of four-year college entrants, as was predicted by social reproduction theorists.

Although researchers disagree on why and how much education matters, community college entrants should get fewer payoffs than four-year entrants. According to human capital theory (Becker 1962, 1964, Schultz 1963, Mincer 1958, 1974), two-year college entrants spend fewer years in school, therefore investing less in their skills and knowledge. According to signaling theory, two-year colleges are less selective or prestigious and should send also send a less positive signal to employers (Spence 1976, Collins 1979, Jencks et al. 1979). Two-year college attendance may contribute less to one's social capital, defined as the ability to gain benefits from one's social networks and other social structures (Bourdieu 1986, Coleman 1988, Portes 1998).

According to socialization theory, individuals who enroll in two-year colleges, either because they complete fewer years of schooling or because they complete similar years of inferior schooling (Monk-Turner 1990), should acquire fewer of the skills and personal traits that would make them more desirable employees (Pascarella and Terenzini 1991). Recent research identifies a multitude of traits, in addition to cognitive ability, that are important for getting ahead, such as punctuality, linguistic style, even attractiveness (Bowles, Gintis, Osborne, 2005). While many of these may result from socialization in the home or genetic inheritance, education also plays a role in developing these characteristics (Kingston et al. 2003, Pascarella et al. 1996).

In my analyses, I distinguish between *level of college entry* effects and *degree* effects. I test *level of college entry* effects, i.e., the effect of *enrolling* in a community college, regardless of the educational outcome, compared to a four-year college. These

analyses test whether, as critics argue, *entering* college at the community college level diminishes attainments. As a separate matter, I also test *degree* effects, i.e., the effect of obtaining the associate's degree compared to the bachelor's degree.

(2) Does it pay off in terms of earnings and occupational prestige to attend a two-year college, relative to no postsecondary education?

This next set of research questions engages with more a recent body of research on community colleges. This research compares community college entrants and graduates to others in the sub-baccalaureate labor market (Grubb 1996, 1997, 1999a, Pascarella 1999, Leigh and Gill 1997, Lin and Vogt 1996, Kane and Rouse 1995, Marcotte et al. 2005). Accepting that community college students will earn less and hold lower prestige jobs than four-year entrants, this research uses the comparison group; high school graduates without any postsecondary schooling (Pascarella 1999).

Following in the tradition of these studies, I test whether community college *entrants* and *graduates* (AA degree holders) have significantly higher earnings than students who graduated high school but who have not obtained any postsecondary schooling. I also test whether dropouts from community colleges receive any economic benefits and whether the associate's degree confers additional benefits compared to the high school diploma. The NLSY allows me to add to previous studies by determining whether community college graduates' earnings remain high relative to high school graduates.

(3) How will two-year college entrants compare to four-year college entrants and high school graduates on a wider range of economic resources?

Here, I contribute to the ongoing study of community college effects on economic standing by expanding the range of economic outcomes considered. I ask whether economic resources – beyond earnings – are improved by attending community colleges. Household income, accumulated savings, and equity may be better indicators of economic situation than individual earnings, particularly when talking about ethnic inequality (Attewell and Lavin forthcoming, Oliver and Shapiro 1995, Conley 1999, Spilerman 2000). Home ownership is an important indicator of well being because it represents the most important source of wealth and can be important during periods of economic stress (Spilerman 2000). The effect of a community college education on these outcomes is unknown. I compare community college *entrants* to four-year entrants and high school graduates on household income, home ownership, value of home, and value of other financial resources such as savings and stocks. Because these outcomes have not been analyzed in relation to the associate's *degree*, I also compare the relative returns to the associate's degree to the high school diploma and the bachelor's degree.

(4) How will the children of mothers who attended two-year colleges do in school and on cognitive tests relative to children whose mothers who attended four-year colleges and relative to mothers who did not achieve any postsecondary schooling?

Higher education leads to benefits beyond the individual (Blau and Duncan 1967, Duncan, Featherman, Duncan 1972, Sewell and Hauser 1975, Featherman and Hauser 1978, Becker 1981, Becker and Tomes 1986, Corcoran et al. 1992, Haveman and Wolfe 1994, Duncan and Brooks-Gunn 1997, Hertz 2005, Attewell and Lavin forthcoming).

Most studies compare parents with BA degrees to those with no postsecondary schooling (cf. Attewell and Lavin forthcoming). Whether one thinks that parents pass on educational advantages to children through higher earnings, greater social capital, better parenting practices, or more advanced linguistic styles, parents with BA degrees should be able to pass on more advantages to their children. The effect of community colleges upon these outcomes is not known. This question is important given the high enrollment of low-income students in community colleges. Critics fault community colleges for reproducing inequality; here I ask whether reproduction is carried over into the second generation. I examine whether mothers who attend community colleges can pass on important benefits to their children, measured by performance in school and on tests. In addition to analyses that look at level of college *entry* effects, which ask whether it pays off to enroll in a community college, I also look at *degree* effects. How do children of mothers with associate's degrees compare to children of mothers with high school diplomas and children of mothers with bachelor's degrees in terms of children's test scores and school-related behaviors? Can parents who attend community colleges pass on the same kinds of advantages that are typically attributed to four-year colleges?

(5) How will two-year college entrants compare to four-year college entrants and high school graduates on home environment characteristics such as parenting practices and marital stability?

Parents with more education pass on advantages through a variety of mechanisms, including greater economic resources, cultural and social capital, and parenting practices (Gans 1962, Attewell and Lavin forthcoming, Kingston 2000, Farkas 1996, Lareau 1989, 2003, Coleman 1988). I propose that parents with even some community college

experience can pass on advantages to their children, through culturally enriched environments or greater interaction regarding children's schooling. According to Rosenbaum (1976) and McDonough (1997), first-generation college students lack important information about the college application process. Lower socioeconomic students may also lack important information about the process of applying for financial aid (Kane 1999). Although some view community colleges as extensions of high schools, the community college experience may improve parents' knowledge of the college application process compared to families where neither parent is college educated. Age of mother and marital stability can also influence children's outcomes. Despite the fact that education influences marital and fertility decisions, there has been a lack of research in the community college literature on the effect of two-year college attendance on marriage and fertility behaviors.

(6) Will two-year college attendance pay off for people from all groups, distinguished by gender, ethnicity, socioeconomic status, and ranking on standardized tests?

Social reproduction theorists are particularly concerned with the effects of community colleges on disadvantaged students. The concern is not with whether the rich stay rich, but rather, whether the poor stay poor. Here the findings are inconclusive. Most researchers found lower rates of degree attainment for low-income students, students of color, and women (Blau 1999, Velez and Javalgi 1987). Anderson and other (1987), however, did *not* find race differences in graduation rates. Horn and Carroll (1989) found no gender differences in graduation rates after the 1980s.

Some found lower payoffs to the associate degree for low-income students and students of color mainly due to their overrepresentation in lower status programs (Lin and Vogt 1996, Richardson and Bender 1987, Pincus 1980). Others found that attending a community college might actually be more beneficial in terms of earnings for students who come from disadvantaged backgrounds (Whitaker and Pascarella 1994). For example, Grubb (1999a) found higher earnings returns to the AA degree for black men and women. Early studies found lower payoffs to associate degrees for women, primarily due to concentrations in lower-paying fields such as cosmetology and secretarial studies (Pincus 1980, Wilms 1980), while later studies found higher returns for women (Gill and Leigh 2000, Lin and Vogt 1996, Grubb 1997, Kane and Rouse 1995). Kane and Rouse (1999) attribute this to women's concentration in the high-paying field of nursing.

Statewide studies have found that all ethnic groups make significant gains in earnings from obtaining an AA degree or Certificate (Friedlander 1993, 1996, Froeschle 1991, Seppanen 1990, Pfeiffer 1990). Heineman and Sussna (1977) found that in mid-western community colleges, attendance benefited nonwhite females the most; they were the only group for whom attending a four-year did not add anything. Sanchez and Laanan (1997) found a narrower gender gap in earnings among AA degree and Certificate holders than other researchers. In Florida, women experienced a greater percentage change in earnings from attending a community college, although their median earnings were still lower than men's (Pfeiffer 1990). Younger students also experienced a greater percentage change in earnings. Most scholars concluded that community colleges play an even more important role for the economically disadvantaged than for more affluent students.

Chapter Two:
Methodology

Data

To address these questions, I employ two longitudinal datasets. The National Longitudinal Survey of Youth 1979 adult file (NLSY79) is a nationally representative sample of 12,686 individuals who were 14 to 24 years of age in the base-year of the survey in 1979. Respondents participated in surveys every one to two years after the base year. The final survey year included in this dissertation is from the year 2000. Only respondents who made it into the final three surveys are included in the analyses in order to ensure up-to-date information. This dataset has the benefit of following students for more years than other datasets commonly used in community college studies. The average NLSY college entrant entered college in 1980, 20 years before the final follow-up survey.

The National Educational Longitudinal Study (NELS:88) will allow me to examine a more current cohort of students; 25,499 eighth-graders from 1,052 schools were surveyed in 1988. The last follow-up included is the fourth, conducted in the year 2000. Students in the NELS typically entered college in 1992, giving them eight years to complete college. To be included in these analyses, NELS students had to participate in the final survey and have transcript data.

The NLSY and NELS datasets are not directly comparable. The NELS serves mainly to provide information on more recent community college students. The NLSY respondents entered college approximately 10 years before NELS respondents did, giving them 10 more years to complete college. However, not all differences can be attributed to

the different age cohorts. There may also be cyclical effects, such as rising and declining returns to certain kinds of degrees or jobs. The NELS also follows students of the same age; therefore, most entered college around the same time. The NLSY follows respondents from a range of eight years and their dates of college entrance are therefore less uniform.

For the intergenerational questions, I created a dataset using the NLSY79 children's file, which links 11,211 children to their mothers in the NLSY adult file and provides detailed information on the children's educational progress. Few other datasets link children to their parents, offering detailed educational information on both. This will allow me to determine whether a respondent's parent ever attended a community college and more broadly to compare the educational attainments of parents and their children.

Major Variables

The main variables constructed for this study are level of college entry (community/two-year or four-year) and educational attainment. In both datasets, I defined respondents as college entrants by going through each survey year for a response to the question, "have you ever attended college?" Respondents were then defined as two-year college entrants if the first time they indicated they entered college, it was identified as a two-year college.

Educational attainment is defined in both datasets as the highest degree earned as of the year 2000. Respondents who had indicated that they entered college at any point during the survey but did not complete a degree by the year 2000 were given the educational attainment of "some college." For analyses of some two-year and some four-

year college, I divided "some college" into "some two-year college" and "some four-year college" using a variable asking if respondents ever entered a four-year college. For analyses comparing community college entrants to high school graduates, I defined "high school graduates" as respondents who obtained a high school diploma but did not attend college at any point during the survey years. Respondents could enter college at any time during the survey, although only NLSY respondents in the 1996, 1998, or 2000 waves (n=8,984) and NELS students in the fourth follow-up (n=12,144) are included in analyses.[9] Educational information is self-reported in the NLSY. In this NELS, this information comes from college transcript data.

Demographic variables were measured in the base-year of each dataset. Outcomes such as earnings and household income are drawn from the latest of the final three NLSY surveys or the final survey of the NELS. Children's outcomes were taken from different parts of the NLSY79-Child File, depending on when the outcome was measured. See Appendix A for a list of variables used in the following analyses.

Analytical Strategy

Like previous community college studies, I examine the effects of attending and graduating from a community college using traditional regression models with statistical controls for background characteristics.[10] Cohen (1990) faults critics for failing to disaggregate the effects of community colleges from the characteristics of the students

[9] NLSY respondents must have participated in the final three waves so that earnings did not have to be adjusted for inflation. NELS respondents must have made it into the fourth follow-up so that enough time elapsed after college entry.

[10] Ordinary least squares or logistic regression will be used, depending on the outcome. Controls for background characteristics include ethnicity, gender, age, socioeconomic status, and academic performance in high school.

who enter them. Community colleges enroll disproportionate numbers of minority, lower income, returning students, and students with weaker academic preparation. Some of the negative effects attributed to community colleges may have been overestimated in the past due to failure to adequately control for the characteristics of students who enter them. Students who attend community colleges differ from those who attend four-year colleges in ways that will negatively affect outcomes. Likewise, children of better off mothers may do better on schooling outcomes because of her improved resources and other forms of capital. By using regression analysis, I can determine whether outcomes derive from background characteristics or are due to respondents' experience with community colleges.

According to Lieberson (1985) and others, including statistical controls for important variables such as age, ethnicity, gender, socioeconomic status, and academic performance, as is done in conventional regression analysis, does not sufficiently avoid selection bias. A relatively new technique, known as the Counter-Factual Model of Causal Inference or "propensity models" (Rosenbaum and Rubin 1985) can improve causal estimates for several reasons. [11] As a nonparametric approach, this technique improves causal estimates by balancing the covariates of the "treatment" and "control" group, therefore removing some of the bias due to observable variables (DiPrete and Gangl 2004). Matching eliminates the relationship between covariates and assignment to the treatment, therefore eliminating bias arising from these covariates. Unlike regression, matching also does not assume that casual effects are constant in the population.

Propensity score modeling is best understood by analogy to a randomized experiment (Rosenbaum and Rubin 1985, Heckman et al. 1998, Winship and Morgan

[11] For other studies that use propensity models, see Harding 2003, Morgan 2001, and Smith 1997.

1999). In the experimental method, subjects are randomly assigned to a control group and a treatment group. Because subjects are randomly assigned, they are matched on background characteristics. Therefore the observed effects can be attributed to the treatment itself, which is in this case two-year college attendance.

The counter-factual model mimics the approach used in the experimental method by assigning each respondent a "propensity" to attend a two-year college, through logistic regression and controlling for all available predictive variables. See Appendix B for more information on the process, including the variables used in the propensity regression, the number of matches, and standard biases on the matched and unmatched sample.

Using the statistical package STATA, each person with a given propensity score who *did* receive the treatment (i.e., entered a two-year college) will be paired with a person who has a nearly identical propensity score, but who *did not* receive the treatment (entered a four-year college). The second respondent in each pair functions like a control group, providing a "counter-factual" estimate of what the outcome for the treatment member of the pair would have been, if that individual had not received the treatment. I require the program to match people who have the same ethnicity and gender.[12] This allows me to run models separately for each ethnic-gender group.

The last step uses this matched sample to compare the treatment group with the control group on the dependent outcome variables, in this case, the effect of attending a two-year college on earnings, job prestige, household resources, and a variety of children's outcomes, while minimizing selection bias and controlling for the effects of various background variables. In most cases, the coefficients from the matched samples

[12] In analyses of socioeconomic differences, I force-match respondents on their socioeconomic status, measured in quartiles.

will be used, although the magnitude of the coefficients from the matched sample will be compared to the coefficients from the conventional regression models to determine whether controlling for selection bias reduces the negative effects of attending or graduating from a two-year college.

According to Rouse (1995), to study community college effects one would ideally like to randomly assign students to two- and four-year colleges. This is, in a sense, what I have done by using counterfactual propensity models. If using propensity matching diminishes gaps in earnings between community college and four-year college entrants, it may show that community colleges play a bigger role in improving attainments than is commonly believed. I present results from the matching technique alongside regression results as an alternate technique for controlling for background effects. When you apply new statistical techniques, long-held assumptions may no longer hold.

Missing data on background characteristics have been filled using Amelia, a program that uses a multiple imputation method to compute values for missing data (King et al. 2001). Amelia creates five excel datasets, that I convert to SPSS (version 11.5). I then merged unfilled variables (level of entry, educational attainment, and all outcomes) onto these datasets. Datasets were then stacked and converted into STATA (standard version 8) in order to compute propensity scores. I use the statistical packages STATA for all analyses.

I use normative weights from the year of the outcome for descriptives statistics. However, I did not use weights in multivariate analyses and in any children analyses, mainly because variables came from many different years (NLSY79 User's Guide 2002)

and because important information was controlled for in the models (Winship and Radbill 1994). Attempts to use different weights did not change findings substantively.

Methodological Contributions

This dissertation makes several novel methodological contributions to the study of community college effects. Most critics compare community college entrants to four-year college entrants and graduates, while most proponents compare community college graduates to high school graduates. I employ both of these comparisons and more.

Past studies also differ regarding who should be included in the data pool and how long they were followed. Studies such as those conducted by the U.S. Department of Education include only first-time college students who enter college within two years of graduating high school and enroll fulltime, which eliminates anywhere from one-half to two-thirds of community college students (Dellow and Romano 2002). Furthermore, "incidental" students, students who drop out without completing a semester's worth of credits (Adelman 1998) and students who drop out for longer than one year are eliminated from several NCES analyses. The NLSY does not require that students attend college directly after high school, which is particularly important for studies of community college entrants who often return to school as older adults.

The NLSY also follows students for more years than commonly used datasets, such as the NELS and High School and Beyond (HS&B) datasets, while the NELS:88 follows a recent cohort of students. Most studies of degree attainment, earnings, and occupational prestige draw conclusions from datasets that stopped following respondents after eight or ten years, which may underestimate degree attainment since approximately

44% of community college students who aspire to bachelor's degrees are still enrolled after eight years (Hoachlander et al. 2003). The NLSY follows respondents for 20 years. This is crucial because community college students are more likely to delay college entry after high school and to take longer to complete degrees due to high rates of part-time enrollment and a greater tendency to drop in and out of college due to work and family obligations (Adelman 2004, Cohen 2003). I also follow respondents many years longer than other studies that used the NLSY dataset (Rouse 1995, Leigh and Gill 1997, Surette 1997, Grubb 1999a).

Only a long-term dataset such as the NLSY contains information on occupational attainments when respondents are in their late thirties and early forties, rather than shortly after college, as previous studies have done. Finally, the NLSY confirm whether the gap in earnings and job prestige between community college and four-year college entrants increases over time, as was predicted by community college critics (Breneman and Nelson 1981, Pincus 1980, 1986, Brint and Karabel 1989). Romano (1986) finds that earnings from associate's degrees pay highly in the beginning, but are overtaken by earnings from four-year colleges around the age of 28, making the NLSY an even more important dataset since respondents are in their late 30s and early 40s.

In addition to looking at the traditional outcomes of educational attainment, earnings, and occupation, I include outcomes rarely or never before examined in relation to community colleges – household economic resources, family formation, parenting behaviors, and the educational progress of children of attendees. I use counterfactual models in addition to traditional regression analysis. Finally, I run models on different

subsets of the population, asking whether community college effects differ for people of different genders, ethnicities, socioeconomic backgrounds, and academic backgrounds.

With these methodological improvements, I hope to generate a more current and accurate estimate of the effect of community college attendance on the life chances of students and their children. Never before have researchers looked at the intergenerational effects of community colleges. Therefore, this study can also contribute more generally to the ongoing examination of education and intergenerational mobility.

Today, 30 years after the first major explosion in enrollment, is an important time to examine community colleges. Many of the criticisms came when community colleges were just beginning to expand, though their effects could not yet be anticipated. Furthermore, many criticisms came during a time of diminished returns to all kinds of education. Critics could not know that the economy would increase its demand, and payment, for technical skills (Grubb 1999a).

Models

The following analyses are presented in three chapters. Chapter Three examines the traditional outcomes of *personal earnings* and *occupational prestige*. Analyses are run on the NLSY and NELS datasets. Exploring the social reproduction perspective and the functionalist perspective, this section will ask whether individuals benefit in terms of job rewards by attending a two-year college, compared to attending a four-year college or to entering the labor force with a high school diploma but no postsecondary education. Analyses will also be run separately on groups defined by gender, ethnicity, income of family or origin, and cognitive test scores. For these analyses, I created four major

propensity scores: propensity to attend a community college relative to a four-year college; propensity to attend a community college relative to no college; propensity to complete an associate's degree relative to a high school diploma; and propensity to complete an associate's degree relative to the bachelor's degree.

Chapter Four looks at outcomes not commonly studied in relation to community colleges, but that may have important consequences for standard of living: *household income*, *home ownership*, *value of home*, and *value of other financial assets*. This section asks whether students can gain other kinds of economic benefits from attending a community college. Again, the major comparisons will be community college entrants with four-year college entrants and respondents with high school diplomas but no postsecondary education. These models are run only on the NLSY dataset, as many NELS respondents are too young to have wealth. Again, I have four major propensities, each corresponding to four treatments: propensity to attend a community college relative to a four-year college; propensity to attend a community college relative to no college; propensity to complete an associate's degree relative to a high school diploma; and propensity to complete an associate's degree relative to the bachelor's degree.

Chapter Five examines outcomes never before studied in relation to community colleges: *children's educational outcomes*, *parenting practices*, and *marital and fertility history*. I ask whether mothers who attend community colleges pass on advantages to their children. The children's outcomes are cognitive test scores (PIAT and PPVT), grades and behavior in school, college plans, college preparatory curriculum in high school, and college attendance for children who are old enough. While few children are old enough to have their own measures of socioeconomic status, I am considering their

educational histories as signs of "cognitive value added" and future upward mobility. Parenting mechanisms, such as cognitive and emotional stimulation, will also be examined. I examine whether parents with associate degrees pass on important benefits to their children through a variety of mechanisms, such as parenting practices that will in turn improve their children's grades and test scores and put them on the college track. I expect greater benefits to be passed on compared to parents with no college education, but less than parents with bachelor's degrees. Again, I use regression and propensity models. Children are matched on mother's propensity to go to a community college, relative to a four-year college or no college, and her propensity to get an associate's degree, relative to the high school diploma and the bachelor's degree.

When the number of cases allows it, I run models separately on groups distinguished by sex, ethnicity, socioeconomic status, and cognitive skill. The crux of the social reproduction argument is that community colleges reproduce preexisting class inequality, but the evidence thus far has been inconclusive.

Descriptive Statistics

The community college sector is popular in both cohorts. Among *college entrants*, 44.8% of NLSY respondents entered college at the two-year college level (2827/6315) and 44.4% of NELS college entrants entered at the two-year college level (3056/6879). This is consistent with the 42% reported by Dougherty (2002) for first time, fulltime freshmen. Taken another way, this means that almost one-third of all *high school graduates* enrolled in community colleges.

Although there is considerable overlap, descriptives also confirm that community college and four-year college entrants differ, to varying degrees, on characteristics known to influence educational and occupational attainments. This makes controlling for student characteristics crucial when examining community college effects. Students of color and women are slightly more likely to attend community colleges. Students who enter community colleges are from much lower socioeconomic backgrounds, as measured by parents' education, income, and occupations. Students who enter community colleges also have much lower grades in high school, lower standardized test scores, and lower degree aspirations. They are less likely to be in the college preparatory curriculum. In the NLSY, community college entrants were also older and much more likely to have a child when they entered college (see Appendix C).

Chapter Three:
Community College Effects on Individual Economic Outcomes

In this chapter, I examine traditional higher education outcomes: personal earnings and occupational prestige. Personal earnings and occupational prestige are among the most studied economic outcomes associated with higher education. Students most commonly cite "obtaining a higher paying job" as their main reason for attending college (Cohen 1990). It is over these outcomes that critics and supporters of community colleges have debated for the past four decades.

According to all theories on the economic returns to education, students who attend community colleges should hold jobs with lower prestige and less pay compared to similar four-year college students. Not only do community college entrants complete fewer years of schooling than four-year college students, but these years of schooling are considered inferior to the years completed at four-year colleges (Monk-Turner 1990, Karabel 1972, Brint and Karabel 1989, Pincus 1979, 1980, 1986, Bowles and Gintis 1976, Zwerling 1976).

The human capital approach explains the payoffs associated with college in terms of an investment in human capital, defined as the knowledge, skills, and behaviors that are rewarded in the labor market (Becker 1962, 1964, Schultz 1963, Mincer 1958, 1974; Pascarella and Terenzini 1991). Because community college students spend fewer years in college than four-year college students, they acquire less human capital. Community colleges may also be less lucrative investments. Community colleges may also provide fewer opportunities to invest in one's social capital, defined in this case as the broad

social networks one can draw upon for such things as information about job opportunities (Coleman 1988, Lin 2001, Portes 1998).

Colleges and universities are also important agencies of socialization, preparing children and adolescents for their adult roles, particularly in the labor market (Pascarella and Terenzini 1991, Meier 1995). Community college students will have fewer opportunities for socialization as well as socialization into the *lower* sectors of the labor market. Recent research identifies a multitude of traits, in addition to cognitive ability, that are important for getting ahead, such as punctuality, linguistic styles, even physical appearance (Bowles et al. 2005). While many of these result from socialization in the home (Bourdieu 1986), colleges also play a role in developing these characteristics (Kingston et al. 2003, Pascarella et al. 1996).

According to signaling (Spence 1976) or credential theories (Collins 1979, Jencks et al. 1979), college functions mainly to send a "signal" to employers that a prospective employee possesses desirable traits such as intelligence and discipline. Because community colleges are less selective and confer only two-year degrees, they should send a less positive signal to employers. For example, Heckman and Rubinstein (2001) find that the GED sends mixed signals to employers that recipients lack desirable traits such as perseverance and self-discipline.

Community college students do complete fewer years of schooling and are much less likely to complete a bachelor's degree than similar four-year college students. Table 3.1 shows the educational attainment trajectories of community college and four-year college entrants. [13] Roughly, 20% of community college entrants complete a BA degree,

[13] Because all earnings and job prestige analyses include only fulltime workers, the figures presented in Table 3.1 include only respondents who worked fulltime in the final follow-up surveys.

compared to 60% of four-year entrants. In fact, non-completion is the modal category for two-year college entrants in both datasets, while the modal category for four-year college entrants is the BA degree.

Not only are two-year college entrants less likely to get a BA, they are less likely to get any degree (Berkner et al. 2000, Dougherty 1992, Brint and Karabel 1989, Astin 1983, Medsker and Tillery 1971). For example, Grubb (1996) found that 38.2% of community college entrants earned a degree, compared to 57.0% of four-year college entrants. In the NLSY, I find that 40.5% of community college entrants received a credential by the final follow-up in 2000, compared to 68.2% of four-year college entrants.

Table 3.1
Educational Attainment by Level of College Entry, Fulltime Workers[a]

	NLSY79		NELS88	
	Community College Entrant	Four-year College Entrant	Community College Entrant	Four-year College Entrant
Some Two-year	896 (46.8%)	—	1,144 (52.8%)	—
Some Four-year	244 (12.7%)	751 (31.8%)	229 (10.6%)	800 (26.2%)
Certificate[b]	5 (0.3%)	3 (0.1%)	—	—
Associate's Degree	382 (19.7%)	157 (6.7%)	328 (15.1%)	94 (3.1%)
Bachelor's Degree	308 (16.0%)	997 (42.3%)	374 (17.3%)	1,535 (50.3%)
Master's Degree	82 (4.2%)	341 (14.2%)	91 (4.2%)	622 (20.4%)
Ph.D.[c]	5 (0.3%)	113 (4.9%)	—	—
N of cases	1,921	2,361	2,166	3,051

[a] Values are presented only for respondents who have a value for earnings.
[b] Certificate degree holders were not included in the NELS.
[c] MA and PhD's are combined in the NELS because of the few number of doctoral degrees.

Table 3.1A shows the earnings associated with each level of educational attainment. Students who initially enroll in community colleges earn less than their four-year counterparts do at all levels of educational attainment, with the exception of the four-year college dropouts and associate's degree holders.[14]

[14] Community college entrants who drop out of four-year colleges may earn slightly more because they have accumulated years at community colleges *and* four-year colleges.

Table 3.1A
Mean and Median Earnings by Level of College Entry, Fulltime Workers

	NLSY79				NELS88			
	Two-year College Entrant		Four-year College Entrant		Two-year College Entrant		Four-year College Entrant	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Some Two-year	$36,761	$31,000	—	—	$27,123	$25,000	—	—
Some Four-year	$45,056	$35,000	$39,698	$32,000	$31,008	$26,000	$28,727	$26,000
Associate's Degree	$40,955	$33,000	$37,979	$36,313	$26,701	$25,000	$29,073	$28,000
Bachelor's Degree	$54,428	$45,598	$65,772	$52,000	$31,369	$30,000	$35,376	$33,000
Master's Degree[a]	$65,319	$50,000	$70,753	$55,000	$33,450	$31,000	$36,924	$34,000
Ph.D.	$83,986	$87,306	$115,372	$90,000	—	—	—	—
Total	$42,792	$35,000	$58,654	$45,000	$28,497	$26,000	$33,668	$31,000

[a] MA and PhD's are combined in the NELS because of the small number of doctoral degrees.

However, these descriptive tables tell only part of the story. In testing the negative consequences of attending a community college, my concern is with the portion of the observed gaps in degree attainment and earnings that can be attributed to enrollment in community colleges and the portion that can be attributed instead to students' background characteristics.

According to a strict social reproduction argument, two-year colleges were designed to divert students from four-year colleges to community colleges where they were taught narrow occupational skills. As a result, they were prepared for low-paying mid-level occupations (Brint and Karabel 1989, Pincus 1986, Bowles and Gintis 1976). Therefore, there should be a strong independent "community college effect." Because of this diversionary function, researchers compared *community college entrants* to *four-year college entrants.*

Using the National Longitudinal Survey 1972 Cohort (NLS72), Breneman and Nelson (1981) found similar incomes among two-year and four-year entrants once they controlled for background characteristics, although they only studied male respondents four years out of college. Upon finding non-significant earnings gaps, however, they predicted that this parity would erode over time due to the lower occupational prestige jobs found among two-year college entrants. Anderson (1984), also using the NLS72 dataset and following respondents seven years out of college, found that community college entrants held jobs with lower occupational prestige scores, but this time they earned $.05 an hour *more* than similar four-year college entrants. Using the NLSME datatset, Monk-Turner (1988) found that 10 years after entering college, starting college at the community college level decreased earnings by 6% and lowered occupational

prestige by 12 points (see also Monk-Turner 1983). She concludes that community colleges not only provide two fewer years of a college education, they provide a different *kind* of education, meaning an "inferior" kind of education.

Some of the inconsistency in these results comes from researchers' decisions to control or not control for post-college entry variables such degree attainment and labor force experience (Pascarella and Terenzini 1991). Using the NLS72, both Whitaker and Pascarella (1994) and Smart and Ethington (1985) found only small and trivial effects on occupational status and earnings when controlling for educational attainment.

According to Pascarella (1999), if the effect of entering college at the community college level disappears once the model controls for ultimate educational attainment, then this implies that the community college effect happens *entirely through* lower educational attainments. In other words, students who enroll in community colleges earn less and hold lower prestige jobs because they complete fewer years of schooling and more importantly, are less likely to complete a bachelor's degree, or any degree for that matter. There is disagreement, however, over whether researchers should control for educational attainment. If community college entrants obtain fewer years of schooling, this should be considered part of their effect and therefore not controlled for in regression models (Dougherty 1987, 1991).

These analyses compare the personal earnings and occupational prestige scores of community college entrants, comparing them to both four-year entrants[15] and respondents without any college experience. High percentages of disadvantaged students enter at the

[15] The percentage of reverse transfers (four-year entrants who later enroll in community colleges) was relatively small, so four-year college entrants represent respondents with a four-year college education, whereas community college entrants could later enroll in four-year colleges.

community college level. Are students who enroll in community colleges, by choice or due to low grades or low income, doomed to jobs with less prestige and lower pay relative to four-year entrants? How does their earnings and job prestige compare to respondents with high school diplomas as their highest degree? I do not control for transfer or eventual educational attainment because I am testing the effect of *starting* at a community college.[16] I agree with Dougherty that if two-year colleges diminish educational attainments, then we should consider this part of the "community college effect." I will also look at degree effects by comparing the associate's degree to the high school diploma and the bachelor's degree.

For these analyses, I include only respondents with fulltime jobs.[17] The NLSY dataset allows me to follow students for longer than previous studies and offers more reliable measures of employment outcomes than datasets that follow respondents six to eight years out of high school.

Findings

Community College Entrants relative to Four-year College Entrants

Following the well-known social reproduction studies of the 1970s and 1980s, I compare baccalaureate attainment, occupational prestige, and earnings[18] for students based on their initial level of college entry: community or four-year college. My findings

[16] Variables that occurred after the decision to enroll in a community college or a four-year college were not included in the analyses, although college major (Grubb 1999a) and control of institution (Rosenbaum and Stephan 2005) influence educational and occupational outcomes.

[17] These are no differences in the NLSY dataset in the percentage of two- and four-year college entrants working fulltime (70% of each).

[18] Earnings are bottom-coded at $5,000 and top-coded at $200,000 and are logged so regression coefficients represent percentage differences.

from the NLSY and the NELS datasets support the previous research findings (Table 3.2).[19] Although the degree gaps get reduced by more than a third in the regression models and almost by half once I control for students' background characteristics in the matched samples, a substantial gap in baccalaureate attainment remains. Even after an average of 20 years of entering college, as is the case in the NLSY, a baccalaureate gap of 17.2% in the matched sample remains. This gap can be attributed to level of college entry. The baccalaureate gap is higher (24.1%) in the younger NELS cohort.

[19] This analysis includes only college entrants who aspired to a bachelor's degree or higher.

Table 3.2
Probability of Obtaining a Bachelor's Degree among College Entrants

		Bivariate Gap	Estimated Value from Logistic Regression	Estimated Value from Matched Sample
NLSY79	Community College Entrant	28.5***	27.9***	26.2***
	Four-year Entrant	68.2	52.1	43.4
	N of cases	3,429	3,429	2,070
NELS88	Community College Entrant	29.2***	41.6***	35.7***
	Four-year Entrant	72.7	70.6	59.8
	N of cases	5,180	5,180	2,289

* p<.05 **p<.01 ***p<.001

Although I do not present the table here, there is also a large gap in completion of any degree. Table 3.1 showed that most community college entrants drop out without completing any degree. Again, a substantial portion of the 28% gap in "any degree attainment" can be attributed to student characteristics. A logistic regression reveals that factors such as ethnicity, gender, socioeconomic status, academic achievement in high school, and age at college entry, were also significant predictors of degree attainment. Once I control for these background characteristics, the gap in any degree is reduced to 8.3% in the regression model and 6.8% in the matched model, both significant at $p<.001$. Nonetheless, these analyses show disadvantages in terms of degree attainment for students who initially enroll in community colleges.

The importance of the bachelor's degree for labor market success is well documented. The bachelor's degree, the degree awarded at four-year colleges, leads to higher earnings and more prestigious jobs than the associate's degree, the degree awarded at community colleges. My findings confirm that associate's degree holders earn less than bachelor's degree holders by 44.7% in the NLSY and 24.3% in the NELS:88 (Table 3.3). Although a portion of these gaps is due to students' background characteristics, a substantial premium to the bachelor's degree remains: 24.2% in the NLSY and 18.1% in the NELS.[20] The bachelor's degree also clearly pays off in terms of occupational prestige, leading to jobs scoring 8.3 points higher.

[20] These coefficients come from the regression models, chosen because of the small number of cases in the matched samples.

Table 3.3
Logged Earnings (in percentage gaps) and Occupational Prestige (in point gaps) for Associate's Degrees compared to Bachelor's Degrees, Fulltime Workers Only

		Bivariate Gap	Estimated Gap from OLS Regression	Estimated Gap from Matched Sample
Logged Earnings	NLSY79	-44.7***	-24.2***	-25.0***
	N of cases	1,418	1,418	623
	NELS88	-24.3***	-18.1***	-16.5***
	N of cases	2,205	2,205	882
Occupational Prestige	NLSY79	-11.1***	-8.3***	-8.0***
	N of cases	1,418	1,418	623

* p<.05 **p<.01 ***p<.001

Given the earnings premium attached to the bachelor's degree, and the high rate of dropout at community colleges, we would expect large earnings gaps between community college and four-year college *entrants*. Table 3.1 showed that NLSY fulltime workers who entered community colleges earn an average of $42,792 in mean annual earnings, compared to $58,654 among four-year college entrants. The gap is smaller for the NELS cohort: $28,497 and $33,668, respectively.

The bivariate gap is large in the NLSY and represents a gap of 32% in logged earnings (see Table 3.4). However, community college entrants differ from four-year entrants on a number of important characteristics that can influence earnings. When controls for background characteristics such as ethnicity, socioeconomic status, and academic performance are entered in an OLS regression model, this log earnings gap reduces to 6.2% ($p<.001$). When earnings are compared using the propensity-matched sample, the gap reduces to 5.5%, which is not significant at $p<.001$.[21] Because matching is better than regression at controlling for background characteristics, this finding suggests that we can attribute the earnings gap between community college and four-year college entrants to selection effects rather than community college effects.

[21] Although the number of cases falls in the matched analysis, there are still over 2,000 cases. Additionally, there are negligible differences in the composition of the matched and unmatched samples. For example, the percentage of black respondents is 30.0% in the unmatched sample and 32.7% in the matched sample; Hispanics are 17.4% and 17.8%; female respondents are 47.6% and 46.4%; the average age is 39 in both samples; the average income of family of origin is $20,265 in the unmatched sample and $18,844 in the matched sample; and the average college admissions average is 2.4 in the matched sample and 2.3 in the matched sample.

Table 3.4
Logged Earnings (percentage gaps) and Occupational Prestige (point gaps) for Community College Entrants Compared to Four-year Entrants, Fulltime Workers

		Bivariate Gap	Estimated Gap from OLS Regression	Estimated Gap from Matched Sample
Logged Earnings	NLSY79	-32.0***	-6.2***	-5.5 n.s.
	N of cases	3,482	3,482	2,124
	NELS88	-16.0***	-4.9***	-3.6 n.s.
	N of cases	4,972	4,972	1,998
Occupational Prestige	NLSY79	-8.0***	-2.0***	-1.6***
	N of cases	3,482	3,482	2,124

* p<.05 ** p<.01 *** p<.001

These findings are replicated in the younger NELS cohort. The unadjusted gap is smaller than in the NLSY dataset (16%), but the gap reduces to 4.9% ($p<.001$) when controls are entered in an OLS regression, and 3.6% in the matched dataset (Table 3.4).

My analysis confirms that while a large gap in earnings exists initially between two-year and four-year college entrants, most, if not all, of it is due to background characteristics. The OLS regressions (not shown here) show that other characteristics besides level of college entry, such as ethnicity, gender, socioeconomic background, and high school academic performance, exert stronger and more significant effects on fulltime earnings than level of college entry. In fact, in a regression controlling for *educational attainment*, the gap among NLSY respondents reduces even further, to a non-significant 2.6% in the regression model. This suggests that the remaining community college effect of 6% is due to the lower rates of educational attainments obtained by students who enroll in community colleges. In addition, the remaining gap in occupational prestige is small and does not represent a qualitative difference in occupation.

This does not mean that students who enter two-year colleges earn as much as students who enter four-year colleges, but it does mean that the explanation for the gap does not lie solely in the colleges themselves, but rather in the characteristics that students bring in with them. The "community college" effect discussed by social reproduction theorists is primarily the result of the combined effects of background factors such as ethnicity, socioeconomic status, and weaker academic performance in high school, all of which influence subsequent occupational outcomes.

Furthermore, it is not the case that the earnings of two-year college entrants deteriorate over time due to low prestige dead-end jobs with fewer chances for raises and promotions, as predicted by Pincus (1980) and Breneman and Nelson (1981). Although it is difficult to separate time and cohort effects, the NLSY79 follows a cohort only three to nine years younger than the respondents in the NLS72, the cohort used by Breneman and Nelson, but follows them an additional 10-15 years after entering college.

Consistent with previous studies, I find a significant gap of eight points in occupational prestige among the NLSY cohort (see Table 3.4).[22] Much of this gap is due to background characteristics: With controls for a variety of background factors,[23] the gap in occupational prestige reduces to two points in the regression model and the matched sample. While this gap is statistically significant, it hardly makes an important difference in terms of occupation. The regression model (not shown here) shows that other qualities such as ethnicity, socioeconomic status, self-esteem, and parenthood have larger effects on occupational prestige. So although community college entrants are less likely to complete any degree, and much less likely to complete a bachelor's degree, a larger portion of the gaps in earnings and occupational prestige scores can be attributed to student background characteristics than to their initial level of college entry.

There are several explanations for these small earnings and occupational prestige gaps, despite the fact that many four-year entrants get a bachelor's degree and so many community college entrants drop out without anything. While the payoff to the bachelor's degree is undisputable, Table 3.1 also shows that high portions of *both* groups drop out

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[22] Occupational prestige is the Duncan SEI and is measured in the NLSY cohort only.

[23] All regression models control for ethnicity, gender, age, socioeconomic status (parents' education, income, and occupational prestige), high school academic performance, score on psychological tests, degree aspirations, age at college entry, urban residence, and parenthood status. See Appendix B.

without any degree; approximately 30% of four-year college entrants in both cohorts dropped out without any degree. Furthermore, approximately 20% of community college entrants successfully obtained a bachelor's degree.

Furthermore, while these gaps in degree attainment represent unadjusted gaps, Table 3.1 shows that the gap in BA attainment shrinks considerably with controls for students' background factors. The same is true for degree attainment of any kind. Although community college entrants are still more likely to drop out without a degree with controls, they are more likely to complete credits from vocational fields, fields that pay off more in the labor market than the academic credits found more often among four-year college dropouts (63.7% compared to 44.5%). Because they are more likely to work while enrolled in college, community college dropouts also enter the labor market with more work experience than do four-year college dropouts.

The next several analyses examine some of the common educational paths taken by college entrants. Community college entrants have several potential trajectories: 19.7% completed an associate's degree, 12.7% transferred to a four-year college but dropped out without a bachelor's degree, and 20.5% transferred and earned a bachelor's degree. Although we associate the community college with the associate's degree and the four-year college with the bachelor's degree, it is clear that many students do not fit that pattern.

First, I examine the *modal* pathways for community college entrants (dropout) and four-year entrants (bachelor's degree). [24] Table 3.5 shows that earnings premiums attached to the bachelor's degree are extraordinary. Even with controls for background

[24] In this analysis, "community college dropouts" must have started at a community college and never graduated or transferred. BA degree holders had to initially enroll in a four-year college. Only results from the NLSY are presented.

factors, community college dropouts earn roughly 40% less than similar bachelor's degree recipients.

Table 3.5
Logged Earnings (percentage gaps) for Community College Dropouts compared to BA Recipients, Fulltime Workers – NLSY

		Bivariate Gap	Estimated Gap from OLS Regression	Estimated Gap from Matched Sample
Logged Earnings	NLSY79	-79.2***	-42.5***	-41.1***
	N of cases	1,773	1,773	422

* p<.05 ** p<.01 *** p<.001

However, aside from the premium attached to the bachelor's degree, none of the other potential educational paths shows significant earnings gaps once I control for background factors. The next analysis compares college dropouts. Among NLSY respondent, dropouts from community colleges earn as much as similar dropouts from four-year colleges in the regression and matched models. The gap is only marginally significant among NELS respondents in the matched sample (see Table 3.6).[25] This is consistent with Kane and Rouse's (1995) findings of similar earnings returns to credits from two-year colleges and credits from four-year colleges. These findings fail to provide support for Monk-Turner's claim that two-year colleges offer two "inferior" years of college.

[25] These analyses use a new propensity: propensity to drop out of a community college, among community college and four-year college dropouts.

Table 3.6
Logged Earnings (percentage gaps) for Two-year Dropouts (some AA credits only), Compared to Four-year Dropouts (some BA credits only), Fulltime Workers

		Bivariate Gap	Estimated Gap from OLS Regression	Estimated Gap from Matched Sample
Logged Earnings	NLSY79	-13.1***	-3.6 n.s.	-2.7 n.s.
	N of cases	1,808	1,808	1,190
	NELS88	-6.7***	-0.9	3.9*
	N of cases	2,083	2,083	910

* p<.05 ** p<.01 *** p<.001

Another path open to two-year college students is transfer to a four-year college. This feature has received the most attention from community college critics, who charge that community colleges have abandoned their original transfer function.[26] We saw in Table 3.1 that approximately one-third of two-year college entrants in the NLSY and NELS cohorts transferred to a four-year college (the combination of two-year college entrants who completed some four-year college credits or completed a BA degree). However, if students are able to transfer, they may be discouraged by difficulties in transferring credits, obtaining financial aid, and adjusting to the higher requirements of four-year colleges (Dougherty 1994, 2002). This is known as "transfer shock." Transfers also enroll in lower prestigious colleges or programs, resulting in lower earnings (Lin and Vogt 1996, Adelman 1994).

Table 3.7 shows that if two-year entrants obtain a bachelor's degree (*BA transfers*), they have the same earnings as bachelor's recipients who started at four-year colleges (*BA natives*). In the NLSY, BA transfers earn 13.4% less than BA natives. However, once background characteristics are controlled using OLS regression or the matched sample, the gap becomes non-significant. The same is true for the NELS cohort: There is a 7.5% gap among native and transfer BA degree holders, but this disappears once background characteristics are controlled using regression or the matched sample.

[26] Institutions define transfer differently and figures can range anywhere from 5% to 85% (Cohen 1990). Most find a transfer rate of 22% (Bailey 2002, Philippe and Patton 1999, Cohen and Sanchez 1997). This has remained stable since 1984 (Bryant 2001). Enrollment in programs associated with transfer has risen among recent cohorts, leading Adelman (2004) to predict a rise in transfer rates in the future.

Table 3.7
Logged Earnings (percentage gaps) and Occupational Prestige (point gaps) for BA Recipients who started at Community Colleges compared to BA Recipients who started at Four-year Colleges, Fulltime Workers

		Bivariate Gap	Estimated Gap from OLS Regression	Estimated Gap from Matched Sample
Logged Earnings	NLSY79	-13.4***	-0.2 n.s.	-0.2 n.s.
	N of cases	917	917	342
	NELS88	-7.5***	-1.3 n.s.	-1.7 n.s.
	N of cases	2,492	2,492	888

* p<.05 ** p<.01 *** p<.001

This means that "traveling" to the BA by route of a community college does not have long-term negative consequences attributable to the community college itself. Rather, characteristics of the students explain the unadjusted 13.4% gap in fulltime earnings. This is consistent with Pascarella's (1999) finding that once community college students transfer, they are as likely to get a bachelor's degree and have similar earnings (Pascarella 1999).

Only the lower probability to complete the bachelor's degree, relative to dropping out of a community college or relative to the associate's degree, results in significantly lower earnings for community college entrants, once I enter controls into the equation. This most likely explains the small earnings gap of roughly 6% observed in Table 3.4. Community college entrants are more likely to drop out of college without completing a degree than four-year entrants, but more importantly, there is no earnings gap for dropouts from community colleges and four-year colleges (Table 3.6). Furthermore, if community college entrants are able complete bachelor's degrees, they experience no long-term negative effects on their earnings, net of background characteristics (Table 3.7).

Summary

The earnings and prestige score gaps seen among community college and four-year college entrants who work fulltime are overwhelmingly due to background factors. These findings show that the "community college" effect discussed by social reproduction theorists is primarily the result of the combined effects of background factors such as ethnicity, socioeconomic status, and weaker academic performance in

high school, all of which influence subsequent occupational outcomes. Next, I will compare community college students to workers in the labor market without any college, as examined by community college supporters.

Community College Entrants relative to High School Graduates

Recent researchers prefer to compare the earnings of two-year college students to the earnings of other workers in the sub-baccalaureate labor market, that is, respondents with high school diplomas as their highest degree. Many have shown the benefits to completing the associate's degree, relative to the high school diploma (Marcotte et al. 2005, Grubb 1996, 1999a, Pascarella 1999, Leigh and Gill 1997, Lin and Vogt 1996, Kane and Rouse 1995). Furthermore, many students who attend community colleges are unable to attend four-year colleges due to low grades and test scores in high school, inability to pay four-year college tuition, or family and work responsibilities.

Because students make the decision to enroll in a community or four-year college without the guarantee of a degree, I first ask whether students who *enroll* in community colleges can expect economic payoffs. The "treatment" of interest is community college entrance.

Findings from the NLSY confirm that students benefit from attending two-year colleges, as opposed to entering the labor force with no college experience (Table 3.8). Community college entrants have higher earnings (24.3%) and hold jobs with higher prestige scores (13.8 points). On average, NLSY community college entrants earned $42,792 annually, compared to $32,287 for respondents with the high school diploma as their highest degree.

Table 3.8
Logged Earnings (percentage gaps) and Occupational Prestige (point gaps) for Community College Entrants, Compared to High School Graduates, Fulltime Workers

		Bivariate Gap	Estimated Gap from OLS Regression	Estimated Gap from Matched Sample
Logged Earnings	NLSY79	+24.3***	+10.5***	+7.8***
	N of cases	3,515	3,515	1,744
	NELS88	-0.8	-2.1**	-1.6
	N of cases	4,890	4,890	2,095
Occupational Prestige	NLSY79	+13.8***	+6.9***	+6.2***
	N of cases	3,528	3,528	1,742

*p<.05 **p<.01 ***p<.001

However, as with the previous analysis, a substantial portion of this gap is due to student characteristics rather than community college characteristics. However, with controls, community college students still hold higher paying jobs (10.5% more in the OLS regression model and 7.8% more in the matched sample) than workers with high school diplomas as their highest degree.[27] There is also a remaining gap of more than 6 points in occupational prestige.

The younger NELS dataset shows non-significant earnings differences. Most likely community college does not pay off for the younger NELS cohort because they are only eight years out of high school and benefits may take time to materialize. Furthermore, workers who went directly into the labor force without any college have accumulated more years of labor force experience.

Given the high likelihood that two-year college entrants will leave without completing a degree, the next analysis asks whether community college entrants in the NLSY cohort experience an earnings benefit even if they fail to complete a degree. There is evidence that dropping out of a community college may not be as much of a detriment as dropping out of a four-year college because community students often leave college for a job. Also, community college students are more likely to already have a job and returning to school to upgrade skills. These "skills upgraders" are more likely to come from more economically advantaged backgrounds and performed better in high school (Sheldon 1982).

Most studies find significantly higher earnings for students who have completed some two-year college credits but failed to obtain a degree. Grubb (1996) and Kane and

[27] Here, respondents are still matched based on their propensity to attend a community college, only the reference category is high school graduate.

Rouse (1998, 1995a, 1995b) find that each year yields 5-10% higher earnings. Surette (1997) finds a 9.6% increase for one year of a two-year program. Leigh and Gill (1997) find an earnings increase of 9-13% for attendance of a community college without a degree, relative to high school graduates. Zucker and Dawson (2001) find an earnings increase of 6-9%, but this is barely significant and depends on the number of credits completed.

Relative to students without any postsecondary schooling, community college entrants in the NLSY have slightly higher earnings compared to similar high school graduates, even if they fail to complete a degree (Table 3.9). Community college dropouts earn 6.2% more than workers with only a high school diploma. Almost all of this unadjusted gap can be attributed to the community college education: A 5-6% gap remains after controlling for background factors. This gap is small but it attests to the worth of the education and training received at a community college, even if that education and training does not translate into a degree.

Table 3.9
Logged Earnings (percentage gaps) for Community College Dropouts, Compared to High School Graduates, Fulltime Workers

		Bivariate Gap	Estimated Gap from OLS Regression	Estimated Gap from Matched Sample
Logged Earnings	NLSY79	+6.2***	+6.0**	+5.2*
	N of cases	2,384	2,384	1,344

* p<.05 **p<.01 ***p<.001

Finally, I test how much more completing the associate's degree pays off for fulltime workers in the NLSY. According to community college supporters, the AA degree leads to lower rates of unemployment, higher prestige jobs, and higher pay and is of great benefit to those who do not want to or cannot attend a four-year college (Cohen and Brawer 2003, Grubb 1999a, Pascarella and Terenzini 1991, Pascarella et al. 1988).

Past research shows higher earnings among associate degree holders, 9-27%, compared to high school graduates. Summarizing findings from many national datasets, the NLS72, HS&B, NLSY79, SIPP, NELS92, and 1992 Current Population Survey, Grubb (1999a) finds 18% higher earnings for men and 23% higher earnings for women than similar workers with the high school diploma as their highest degree. Using the Census, Pascarella (1999) finds that men earn 18% more and women 26% more over high school graduates. Using the HS&B, Zucker and Dawson (2001) find a 9% earnings increase for the AA with controls for background factors, compared to the high school diploma. Surette (1997) finds 17% higher earnings for the AA degree relative to the high school diploma. Also using the NLS72, Lin and Vogt (1996) find that an AA degree is clearly intermediate between high school and the BA, adding between 20% and 30% to earnings over high school graduates. Kane and Rouse (1995a) find an earnings premium of 15-27% more to the AA degree relative to the high school diploma. They conclude that the economic payoff to a two-year college is significant over one's lifetime, particularly considering the low cost. A recent study by Marcotte et al. (2005) finds higher earnings among AA degree holders relative to workers with no postsecondary schooling.

Associate's degrees also pay off on in state and individual institutional studies (Sanchez et al. 1999, Sanchez and Laanan 1998, Yang and Brown 1998, Vanderheydan

1994, Friedlander 1993a, 1993b, 1996, Jacobson et al. 1997, Seppanen 1990, Froeschle 1991, Pfeiffer 1990, Heinemann and Sussna 1977).

My analysis of the NLSY cohort shows high returns to the associate's degree relative to a high school diploma. Associate's degree holders who work fulltime earn an annual income of $39,860, compared to $33,180 for high school graduates. This represents a gap of 22.0% in terms of logged personal earnings (see Table 3.10). This gap reduces to 15.2 with controls in an OLS regression and 18.0% in the matched sample. All of these gaps are significant at $p<.001$. These gaps are large and can be attributed to the value of the associate's degree. The high earnings are partly a result of the predominance of vocational fields among associate's degree holders, high-earning fields such as business and health (Grubb 1999a). Almost twice as many associate's degree holders completed their degrees in vocational subjects than in academic subjects.[28] With controls for background characteristics, vocational associate's degrees yield 7.8% more in personal earnings relative to associate's degrees in academic fields (regression not shown here).

[28] It is not easy to define fields as academic or vocational, however, I coded associate's degrees in business, computers, health, social services, and protective services as vocational, and degrees in communications, education, humanities, math, sciences, social sciences, and pre-professional as academic.

Table 3.10
Logged Earnings (in percentage gaps) of Associate's Degree Holders relative to High School Graduates, Fulltime Workers

		Bivariate Gap	Estimated Gap from OLS Regression	Estimated Gap from Matched Sample
Logged Earnings	NLSY79	+21.9***	+15.2***	+18.0***
	N of cases	2,023	2,023	654

* p<.05 **p<.01 ***p<.001

Summary

The NLSY shows clear and positive effects from attending a two-year college relative to entering the labor force with no college experience. Like other researchers, I found significantly higher earnings among AA degree holders among the older NLSY cohort, relative to those with high school diplomas. I found significant and positive effects even when respondents only completed some credits from a two-year college. However, this did not show up in the younger NELS cohort, most likely because the survey only follows students approximately 8-9 years after graduating high school and given that short time period, the high school graduates have been in the labor force longer. Nonetheless, the associate's degree leads to much higher earnings, particularly when in a vocational subject. Efforts should be made to help community college

complete programs or transfer to a four-year college, where their chances of completing a bachelor's degree are on par with students who initially enrolled in four-year colleges.

Subgroup Comparisons

While we know that community college students benefit economically from attending community colleges in the NLSY (this is true relative to workers who attended four-year colleges *and* to workers with no postsecondary schooling), the question remains whether students from disadvantaged backgrounds benefit economically. Community colleges are appealing to students who do not have the income or time, due to work and family responsibilities, to enroll in four-year colleges. As a result, disproportionate numbers of low-income students, students of color, females, and students with weaker academic histories enroll in community colleges. This has concerned social reproduction theories. Critics charge community colleges with, at the very least, reproducing inequality and, at the very worst, exacerbating preexisting inequalities.

Using the NLSY cohort, I test the social reproduction theory by asking whether community colleges increase earnings on groups distinguished by their ethnicity, gender, family income, and scores on achievement tests. Family income refers to family of origin during the base-year of the survey.[29] Score on cognitive tests refers to score on Armed Forced Qualification Test (AFQT), administered in 1980. [30] For comparisons, I divided

[29] If an NLSY respondent was already living apart from parents in the base-year, I imputed family income of origin.

[30] Here I am using the Armed Forces Qualifying Test as a measure of skill or ability. While it is far from a perfect measure of cognitive skill, it is readily available in the dataset and highly predictive of occupational attainments.

these measures into quartiles. In order to preserve cases, I present coefficients from regression models (Table 3.10).[31]

The evidence for differential effects is mixed. Some argue that community colleges increase social inequality (Pincus 1980, Wilms 1980, Monk-Turner 1983, Dougherty 1992, Richardson and Bender 1987, Lin and Vogt 1996). For example, Monk-Turner (1983) found larger earnings gaps between men and women among AA degree holders than among BA degree holders. Early studies attributed this to women's concentration in lower-paying fields such as cosmetology and secretarial studies (Pincus 1980, Wilms 1980). Compared to high school graduates, some researchers found lower payoffs to the associate degree for low-income students and students of color, mainly due to overrepresentation in lower status programs (Dougherty 1992, Richardson and Bender 1987, Pincus 1980). Lin and Vogt (1996) found that two-year colleges increased gaps between blacks and white students and students from low and high socioeconomic backgrounds.

Others found that relative to no postsecondary schooling, community college attendance might actually be more beneficial in terms of earnings for students who come from disadvantaged backgrounds (Whitaker and Pascarella 1994, Grubb 1992, 1999a, Gill and Leigh 2000, Kerchoff and Bell 1998, Pascarella 1999, Kane and Rouse 1999, Adelman 1994). For example, Grubb (1999a) found higher earnings returns to the AA degree for black men and women. Kane and Rouse (1999) attribute this to women's concentration in the high-paying field of nursing. Still others found community colleges to leave preexisting gender and ethnic inequality unchanged (Zucker and Dawson (2001).

[31] Findings from matched samples follow the same patterns relative to regression models that we saw earlier; gaps reduce slightly and significance is reduced. In all cases, substantive findings are the same.

Others advocate community colleges for students with low grades or test scores, pointing to the dismal four-year college graduation rates among academically low performing students (Rosenbaum 2001, Cherry forthcoming). Students of "modest ability or uncertain motivation" are advised to enroll in two-year occupational programs instead of four-year colleges (Wonacott 2003, Gray and Herr 2000, Stanfield 1997). It is important to know whether students with low grades or low scores on standardized tests benefit economically from community colleges, relative to similar students who enroll in four-year colleges.

Table 3.10
Fulltime Earnings Gaps on Subgroups - NLSY
Estimated Percentage Gaps from Regression Models

	Community College Entrants compared to Four-year college Entrants	Community College Entrants compared to High School Graduates
White males	-2.9 n.s.	+15.3***
White females	-1.3 n.s.	-4.7 n.s.
Black males	-9.3*	+7.2*
Black females	-10.2 n.s.	+17.7***
Hispanic males	-15.1***	+3.5 n.s.
Hispanic females	-2.8 n.s.	+16.4***
Income of Family of Origin		
Lowest Quartile	+0.1 n.s.	+12.7***
Second Quartile	-11.1*	+8.5***
Third Quartile	-7.7**	+11.3***
Top Quartile	-8.1 n.s.	+6.8**
Cognitive Ability		
Lowest Quartile	-4.3 n.s.	+6.9**
Second Quartile	-8.9*	+11.2***
Third Quartile	-7.7**	+6.8***
Top Quartile	-3.4 n.s.	+16.4***

* p<.05 **p<.01 ***p<.001

Separate regressions on ethnic-gender groups show evidence of social reproduction for minority males (column 1 of Table 3.10). Black men have a gap of 9.3% in earnings, although it is only significant at $p<.05$. The gap for Hispanic men is statistically significant and quite large at 16.3%. The number of cases falls for Hispanic men; nonetheless, it appears that compared to similar Hispanic males at the four-year college level, attending at the community college level has serious negative consequences for personal earnings.

All other ethnic-gender groups show non-significant earnings gaps; therefore, they are not disadvantaged economically by enrolling in community colleges, net of their background characteristics. While the gap for black females is large, it is not statistically significant.[32]

Contrary to the social reproduction perspective, the lowest-income students do not experience the most earnings disadvantage from attending a community college instead of a four-year college (column 1 of Table 3.10). Nor do the wealthiest students. In fact, it is students from the middle income quartiles that are hurt by enrolling in community colleges. The story is similar for AFQT quartiles; students from the middle scores are the only groups to experience an significant earnings disadvantage from enrolling in community colleges instead of four-year colleges. Nonetheless, although the AFQT is not a perfect measure of ability, it does not appear that students from lower performing groups are hurt by attending community colleges.

With the exception of minority males, the findings here lack support for the social reproduction argument. Students from the lowest income quartiles, students from lowest achievement group, white women, and women of color, are not doomed to lower earnings

[32] This is not due to a smaller number of cases than for other ethnic-gender groups.

if they initially enroll in community colleges. However, this is not true for minority males. The lower earnings of minority males may be due to their low transfer rates among the ethnic-gender groups. Black and Hispanic males have the lowest rates of transfer and degree attainment.[33] Community colleges must work to improve these rates. Otherwise, if black and Hispanic men are able to attend four-year colleges, perhaps they should be encouraged to do so.

Turning now to the second comparison (community college entrants relative to respondents with high school diplomas but no postsecondary schooling), I find that everyone benefits economically with a few exceptions. Only white women and Hispanic men fail to get a significant earnings boost from attending a community college (see Table 3.10, second column). All other ethnic-gender groups have higher earnings relative to similar respondents who did not attend college. This provides mixed evidence for the social reproduction perspective, although the figures show that minority women benefit a great deal.

Early critics pointed to the overrepresentation of women and people of color in low paying fields. An examination of ethnic-gender differences in major among community college entrants shows this is the likely explanation for women. However, Hispanic men are not particularly over concentrated in lower paying fields such as education and humanities, nor are they underrepresented in higher paying fields such as business, health, and engineering.

[33] Sixty-one percent of black males drop out of community colleges, 13.5% get an associate's degree, and 25.9% transfer to a four-year college. Of the 25.9% that transfer, roughly half complete a bachelor's degree. This is lower than the BA attainment rate for other ethnic-gender transfers. The figures are only slightly better for Hispanic males

There does not seem to be support for the social reproduction perspective in terms of economic reproduction. All income groups benefit economically from attending community colleges relative to no college. In fact, contrary to the social reproduction perspective, respondents from the lowest income quartile benefit the most (+12.7%). Similarly, students from all AFQT quartiles receive a positive boost in earnings.

Conclusion

These findings may change the way we think about community college effects on economic inequality and mobility. The left-wing criticism is correct that community colleges diminish educational attainments; however, the movement towards vocational training and the increased returns to the kinds of skills obtained at community colleges has increased economic returns since the 1970s and 1980s.

Rather than dooming students to lower occupational attainments, community colleges improve personal earnings and occupational prestige scores for students unable or unwilling to attend four-year colleges. The earnings payoffs compared to no college are stark. This applies to all groups, with the exception of white women and Hispanic men. For white women, this is most likely due to concentration in lower paying fields. For Hispanic men, this is most likely due to high rates of dropout.

There are clear economic benefits to the associate's degree. In fact, although simply entering a community college did not significantly improve earnings for Hispanic males, if they are able to complete associate's degrees, they experience one of the highest boosts in earnings among the ethnic-gender groups (analyses not shown). Black males also get a relatively high boost. Associate's degrees in vocational subjects such as health

or business can lead to higher earnings relative to BA degrees in academic majors (Lavin and Attewell forthcoming, Grubb 1999a).

Contrary to the social reproduction perspective, I do not find earnings gaps for community college entrants compared to four-year college entrants. There is a small earnings gap of about 6% once I control for background factors in regression models and a non-significant earnings gap in the matched sample. There is also only a trivial occupational prestige score gap of two points. Although community college entrants earn less than four-year college entrants, these findings show that the "community college" effect discussed by social reproduction theorists is the result of the combined effects of background factors such as ethnicity, socioeconomic status, and weaker academic performance in high school.

There is evidence that community colleges reproduce preexisting income inequality for black and Hispanic males, again most likely due to their high rates of dropout as well as labor market segregation and discrimination. For students who are not interested in transferring, occupational attainments are not severely diminished. However, community colleges should work to improve transfer rates for black and Hispanic males.

The payoffs to the bachelor's degree are undeniable. The bachelor's degree opens the door to a more lucrative and prestigious sector of the labor force and qualifies recipients for entry into advanced degree programs. However, with the exception of the premium to the bachelor's degree, there is not much to choose in terms of the other educational outcomes. A "decision tree" reveals that college entrants have a number of potential educational trajectories, particularly at the community college level.

Community college entrants drop out of college, and many do, they can complete an associate's degree, transfer, and complete a bachelor's degree.

Substantial numbers drop out from both college levels and evidence shows that earnings are similar regardless of where students enter college. This is consistent with the findings of Kane and Rouse (1995a). Furthermore, if community college students transfer, they are as likely as four-year entrants are to obtain a bachelor's degree. Contrary to Monk-Turner's (1990) claim that community colleges offer a different "kind" of education, there is no evidence of transfer shock. Most importantly, if they are successful in obtaining a bachelor's degree, and 21% of community college entrants are, their bachelor's degrees have the same economic rewards as bachelor's degrees obtained by four-year entrants.

Although the social reproduction and functionalist perspectives do not speak directly to each other, by including both analyses, I can conclude that community college effects seem closer to four-year college effects than to high school effects in terms of earnings. In other words, there may be strong *degree* effects (the bachelor's degree pays off more than the associate's degree, and the associate's degree pays more than the high school diplomas); however, I do not find strong *level of college entry* effects.

While earnings and occupational prestige are important educational outcomes, the next chapter explores other kinds of financial resources, resources that may better determine standard of living and resources available to offspring.

Chapter Four:
Community College Effects on Household Economic Outcomes

In this chapter, I break new ground by examining outcomes that have not been studied in relation to community colleges, but that have important consequences for economic well being: household income, home ownership, and financial assets. Debates over community college effects have focused on the role community colleges play in reproducing or improving economic standing. Critics fault community colleges for reproducing students' low socioeconomic status and keeping preexisting inequalities intact, while supporters credit them with improving students' economic status and mobility. Each side determines respondents' economic standing through measurements of individual occupational attainments (earnings and occupational prestige).

Individual educational and occupational outcomes are certainly important outcomes when analyzing college effects. However, other outcomes such as household income, accumulated savings, and equity may be better indicators of economic status than individual earnings (Henretta and Campbell 1978). People live in *households* that can vary greatly in terms of pooled resources. These households have consequences not only for the individual but also for the environments in which parents raise their children, the subject of the next chapter.

Here I contribute to an understanding of the economic consequences of attending community colleges by asking whether community colleges can lead to economic benefits other than individual earnings and occupational status. I look at four household economic outcome variables from the NLSY: household income, home ownership, the

value of home among homeowners, and a variable measuring the financial value of other sources of financial wealth (see Appendix A).[34]

Household income represents the total income from all sources. Everyday quality of life is determined not only by ones personal earnings from ones job; more important are the pooled incomes in the household. Household income varies not only according to each member's individual earnings, but also by how many earners are contributing to the household. For this reason, household income is a better indicator of life chances than individual earnings.

Next, I predict various measures of economic wealth. In this research, wealth refers to the total value of financial assets available for immediate consumption (Wolff 1998).[35] Wealth in the form of a home, savings, and equities plays a critical role in standard of living. It matters even more for people from lower socioeconomic backgrounds, who earn less and are less likely to receive inheritances from their parents. Furthermore, wealth can promote upward mobility in the second generation by providing resources for children's college tuition and down payments on homes (Conley 1991).

The first measure of wealth is *home ownership*. Home ownership represents the most important source of wealth because it is typically the largest source of equity (Rosenbaum 1996, Henretta 1979). Because homeowners can borrow money against their homes and refinance mortgages, a home can be critical during periods of economic stress such as a layoff or illness (Conley 1999, Spilerman 2000). I then examine the *value of*

[34] These outcomes come from the NLSY dataset because of available data and the age of respondents. The NELS dataset did not contain detailed information about savings and investment behaviors, and NELS respondents are currently in their late twenties and are less likely to provide valid or reliable measures of wealth.

[35] I have not taken into account debts. This is a difficult issue because debt can symbolize both hardship and prosperity.

homes owned by homeowners. *Other Financial wealth* consists of the combined economic value of savings, stocks, investments, CDs, and retirement funds.[36]

Accumulated wealth and assets are particularly important indicators when talking about inequality. Spilerman (2000) points out that stratification research in the U.S. has focused almost exclusively on the individual as the unit of analysis, rather than the economic resources of the family, despite the fact that family resources are a fundamental source of inequality. This is particularly true regarding ethnic inequality. Due to racial discrimination in home sales and mortgage loans, there are large gaps among whites and blacks in rates of home ownership and the values of homes owned (Massey and Denton 1993, Flippen 2001). While there has been a narrowing of the ethnic gap in earnings, white/black disparities in wealth are stark (Wolff 2001, Shapiro 2004, Conley 1999, Oliver and Shapiro 1995).

Interventions like education may have less of an effect on wealth than on earnings and occupational prestige. Household income, for example, depends greatly on the number of contributors in the household and depends on other factors such as marriage and marital stability (Attewell and Lavin forthcoming). [37] Nonetheless, higher paying jobs offer more opportunities to save and invest, and offer better benefits packages. Some have shown the benefits of attending college on outcomes such as financial wealth (Lavin and Attewell forthcoming, Conley 1999). According to these studies, attending college, relative to no college at all, improves a variety of resources such as household income,

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[36] In order to examine the role of home ownership separately, I excluded value of home from the total value of financial wealth.

[37] Although marital status heavily influences household income, I do not control for post-college entry characteristics. These characteristics may be influenced by level of college entry. In Chapter 5, I look at the effect of community colleges on marital stability and education of spouse or partner.

likelihood of owning a home, the value of that home, ownership of stocks, and savings. While some of this is due to the higher earnings and status of jobs held by the college educated, there is also evidence that people with more education save more and make better investment decisions, resulting in greater household economic resources (Conley 1999).

However, previous studies on the relationship between higher education and economic resources such as savings and equity did not distinguish between types of college. As pointed out earlier, "college" is not a monolithic system in the United States. To this date, there has not been a separate examination of the effects of community colleges on household economic resources.

As community colleges educate larger proportions of low-income and minority students, their effects on these outcomes must be analyzed. Whether community colleges reproduce inequality or promote upward mobility must take into account their effect on these wider measures of economic resources, particularly when it comes to influencing the mobility of the second generation.

Certainly, it makes more sense to talk about household economic resources when talking about children's outcomes. Wealth plays an important role for the second generation, although inheritances and estates matter more for the wealthiest families (Menchik 1979, Mulligan 1997). Parental income and wealth predicts children's schooling outcomes (Axinn et al. 1997, Alwin and Thorton 1984, Sewell and Hauser 1975, Jencks et al. 1983). Families with equity and savings can help pay for their children's college tuition and lend money to their children to buy their first home, helping

to propel them into the middle class (Conley 1999). Wealth also leads to improved social networks, better schools, even ideas about efficacy and risk-taking (Bowles et al. 2005).

Extending the social reproduction argument, I compare the household economic resources of community college entrants relative to four-year entrants. I extend the functionalist argument by comparing community college students to high school graduates. I also look at *degree* effects by comparing the value of the associate's degree compared to the high school diploma and the bachelor's degree. While it is well known that bachelor's degree holders earn more in terms of personal earnings than associate's degree holders (Day and Newburger 2002), the effect of the associate's degree on this wider range of economic outcomes is less known.

Findings

Community College Entrants Relative to Four-year College Entrants

Table 4.1 compares the associate's degree to the bachelor's degree on the four economic outcomes. The results are not surprising and show strong degree effects. Associate's degree holders are disadvantaged on all four economic outcomes. Associate degree holders in the NLSY have average annual household incomes of $59,222, compared to $82,802 for bachelor's degree holders. Logged, this represents a gap of 43.1%. There is a 9.2% gap in the rate of home ownership. Associate's degree holders also own less valuable homes and have less financial wealth, each by approximately $65,000. Logged, these gaps represent approximately 43.2% and 115.4%, respectively.

Table 4.1
Effect of the Associate's Degree compared to a Bachelor's Degree on Household Economic Resources (NLSY)

	Bivariate Gap	Estimated Gap from Regression Models	Estimated Gap from Matched Samples
Household Income (logged)	-43.1%***	-.18.7%***	-20.8%***
N of cases	1,926	1,926	904
Owns a Home	-9.2%***	-4.7%***	-4.8%***
N of cases	2,202	2,202	952
Value of Home (logged)	-43.2%***	-23.6%***	-19.0%***
N of cases	1,584	1,584	727
Other Financial Wealth (logged)	-115.4%***	-64.4%***	-60.6%***
N of cases	1,853	1,853	862

* p<.05 ** p<.01 *** p<.001

The models with controls for respondents' background characteristics show that half of the unadjusted gaps are the result of background characteristics such as ethnicity and socioeconomic background. [38] Nonetheless, significant gaps remain between associate's degree holders. In the matched samples, a 20.8% gap in household income remains. The gap in home ownership is small (4.8%), albeit significant. Homes differ in value by 19%, representing a value of roughly $20,000. Finally, a gap of 60.6% in other sources of financial wealth remains, representing a value of roughly $24,000.

However, as the previous chapter showed, not all community college students complete associate's degrees, and not all four-year college entrants complete bachelor's degrees. Following the original criticisms, that community colleges diminish students' educational attainments and therefore lead to lower economic rewards, the next analysis looks at community college *entrance*. The treatment, therefore, is not degree but level of college entry, community or four-year level.

Relative to four-year college entrants, students who enter at the community college level are disadvantaged on all four household economic resources (Table 4.2). Two-year college entrants have lower annual household incomes by over $16,000, representing a gap of 31.9% logged household incomes. They are less likely to own a home by 5.8%. They own lower value homes and have less financial wealth, both by slightly more than $44,000.

[38] For the propensity-matched models, I matched respondents on their propensity to get an associate's degree.

Table 4.2
Household Economic Characteristics by Level of College Entry (NLSY)

	Community College Entrants	Four-year College Entrants
Household Income	$59,214.55	$75,586.53
(std)	(40,240)	(50,004)
Owns a Home (%)	69.1	74.9
Value of Home	$158,097.78	$202,119.01
(std)	(128,590)	(167,662)
Other Financial Wealth	$76,603.58	$120,947.44
(std)	(121,478)	(154,057)

All of these gaps are statistically significant at p<.001 (Table 4.3). Once I enter controls for background characteristics, either with regression models or with matched samples, these gaps reduce substantially. In fact, none of the gaps remains significant in the matched samples. Gaps are explained by student characteristics such as ethnicity, age at college entry, and earlier parenthood. In the regression models, only a significant gap in financial wealth remains (p<.01), although controlling for background reduces the gap of 67.5% to 8.5%, a reduction of over 87%.

In other words, any observable gaps in wealth between community college and four-year college entrants are entirely due to background characteristics rather than where students started college. While we saw strong *degree* effects in the previous analysis, these results do not show strong *college* effects. Although social reproduction theorists have not typically examined household income and wealth, I argue these outcomes are better indicators of economic well being. Enrolling in a community college instead of a four-year college does not doom students to lower household economic rewards.

Table 4.3
Effect of Entering a Community College compared to a Four-year College on Household Economic Resources (NLSY)

	Bivariate Gap	Estimated Gap from Regression Models	Estimated Gap from Matched Samples
Household Income (logged)	-31.9%***	-.05% n.s.	-2.7% n.s.
N of cases	4,684	4,684	2,927
Owns a Home	-5.8%***	-0.1% n.s.	-1.8% n.s.
N of cases	4,892	4,892	3,084
Value of Home (logged)	-22.2%***	-0.19% n.s.	+2.2% n.s.
N of cases	3,550	3,550	2,159
Other Financial Wealth (logged)	-67.5%***	-8.5%**	-7.7% n.s.
N of cases	4,327	4,327	2,671

* p<.05 ** p<.01 *** p<.001

In order to examine the effect of community college entrance on financial wealth relative to student background characteristics, I examine coefficients from the OLS regression (Table 4.4). Coefficients represent the percentage change in dollars of financial wealth. The table shows that other factors have larger effects than level of college entry. Being from a minority ethnic status has a large effect on value of financial wealth and is much stronger than the effect of starting at a community college. Gender also influences level of financial wealth; women have lower values of financial wealth compared to men. Respondents with low grades in high school, with children before entering college, and with low scores on the self-mastery scale also have lower values of financial wealth. Although the effect of starting at a community college is still significant in the regression model, its effect is dwarfed by the combined effects of these background characteristics.

Table 4.4
Determinants of Other Financial Wealth among College Entrants – Logged (NLSY)

Predictor	Unstandardized OLS Coefficients
Constant	5.036117***
Entered a community college	-.085**
Ethnicity[a]	
Black	-.799***
Hispanic	-.333***
Other	-.196***
Female	-.254***
Age	.020**
Mother's highest grade completed	.031***
Father's highest grade completed	.014**
Income of family of origin	.118E-4***
Mother's SEI	.003***
Father's SEI	.001
U.S. born	-.055
Foreign born parent	.287***
College admissions average[b]	.203***
Units of high school academic courses	.015***
College preparatory track	.144***
AQT80	.010***
Self-esteem[c]	.178***
Mastery	.589***
Highest grade aspirations	.016
Age entered college	-.026***
Had a child before college	-.479***
Lived in urban area	-.125***
R-square	0.211

[a] Reference category is white.
[b] Coefficient represents the value of a one unit increase in letter grade.
[c] Self-esteem and mastery are scales ranging from 1-4; coefficients represent the value of a one unit increase.

* p<.05 **p<.01 ***p<.001

Financial wealth is a composite measure of wealth other than the home. Its value can depend on available resources, such as high earnings, a job with company stock options and retirement plans, or inheritances and help from family members. The earlier finding that earnings were similar for two-year and four-year entrants suggests that the gap in financial wealth is not due to lower earnings. Although there was a gap in occupational prestige score, it was too small to suggest qualitatively different kinds of jobs with very different benefits packages.

Wealth can depend on the wealth of one's family or origin. However, the regression models and matched samples control for parents' education, earnings, and occupational prestige.[39] Accumulated wealth can also depend on behaviors, such as the decision to save or invest in stocks. The persistent wealth gap may have less to do with the means to save, but rather with the decision to save. Conley (1999) finds that people with higher levels of education are more likely to save. In other words, if you take people with similar incomes but different levels of education, the people with more education will save more. The lower levels of education completed by community college entrants may explain their lower values of wealth.

I ran an additional regression predicting financial wealth that controls for educational *attainment* (Table 4.5).[40] I include a set of dummy variables for educational attainment (AA, BA, and advanced degree). Once I control for degree attainment, the gap in financial wealth drops to 4.6% and is not statistically significant (a value of $5,942 in

[39] If a respondent in the NLSY was no longer living with his or her parents, a value for family income was imputed using Amelia, a multiple imputation method.

[40] Previous regressions do not control for events that happen after the treatment, which in this case is college entry at a two-year or four-year college. The purpose of this regression is only to explore a potential mechanism through which community colleges influence financial wealth.

non-logged assets). This means that in regression models, the negative effect of attending a community college happens *through* the lower rates of degree attainment experienced by community college entrants.

Table 4.5
Determinants of Other Financial Wealth – Logged - among College Entrants Controlling for Educational Attainment (NLSY)

	Unstandardized OLS Coefficients
Constant	5.47424***
Entered a community college	.046
Ethnicity[a]	
Black	-.780***
Hispanic	-.289**
Other	-.179
Female	-.265***
Age	.024
Mother's highest grade completed	.021
Father's highest grade completed	.013
Income of family of origin	.129E-4***
Mother's SEI	.003
Father's SEI	.1E-3
U.S. born	-.007
Foreign born parent	.244**
College admissions average[b]	.148**
Units of high school academic courses	.012
College preparatory track	.080
AQT80	.008***
Self-esteem[c]	.150
Mastery	.559***
Highest grade aspirations	-.005
Age entered college	-.024*
Had a child before college	-.419***
Lived in urban area	-.133
Degree attainment[d]	
Associate's Degree	.068
Bachelor's Degree	.735***
Advanced Degree	.649***
R-square	.2218

[a] Reference category is white.
[b] Coefficient represents the value of a one unit increase in letter grade.
[c] Self-esteem and mastery are scales ranging from 1-4; coefficients represent the value of a one unit increase.
[d] Reference category is no degree.

* p<.05 **p<.01 ***p<.001

Subgroup Comparisons

Of particular importance is whether minority and low-income students experience economic benefits from their community college education. In this next section, I explore the effects of starting at a community college versus a four-year college on groups distinguished by their ethnicity, gender, and income of family or origin. Overall, the previous findings showed that community college entrants experience no disadvantage in household resources, with the exception of other sources of financial wealth in the regression model only.

The following analyses of subgroup comparisons use coefficients from the matched samples. On household income, only Hispanic men who started college at the community college level have large negative gaps in household income relative to Hispanic men who started at four-year colleges (-17.8%), although the small number of cases makes the significance level less reliable (Table 4.6). Nonetheless, this finding is consistent with the previous analysis of personal earnings. Only Hispanic men suffered in terms of earnings from starting at a community college (Chapter 3, Table 3.8).

Table 4.6
Subgroup Comparisons for Household Economic Resources, Community College Entrants Relative to Four-year College Entrants
(Estimated Regression Coefficients on the Matched Sample)

	Logged Household Income (% dollar gaps)	Home Ownership (odds ratios)	Logged Value of Home (% dollar gaps)	Logged Financial Wealth (% dollar gaps)
Ethnicity				
White men	-7.0	.9576	+8.9**	-0.9
White women	+5.4	1.064	-5.4	-7.0
Black men	-3.2	.5545*	+7.0	-65.1***
Black women	-0.2	.9632	-1.2	+27.7**
Hispanic men	-17.8*	1.058	-8.2	-33.9**
Hispanic women	-9.1	1.200	+9.2	-15.6
Income of Family of Origin				
Lowest income quartile	-11.1	.8455*	-0.1	-8.9
Second income quartile	+1.7	.9347	-0.8	-7.0
Third income quartile	-3.4	1.024	+5.8	-5.0
Highest income quartile	+0.4	.9814	+0.7	-5.3

* p<.05 **p<.01 ***p<.001

None of the family income categories shows significantly lower incomes relative to similar four-year college entrants. This shows that with the exception of Hispanic men, students who attend community college instead of four-year colleges are not disadvantaged in terms of household incomes. Given that household income is an important measure, if not the most important measure, of economic well being, these findings lack support for the social reproduction argument as it pertains to economic well being.

Home ownership and the value of a home are important sources of wealth and equity. Due to legacies of segregation and redlining, black and Hispanics are much less likely to own homes and if they do, their homes are in less affluent neighborhoods and are therefore lower in value. Because of the high percentages of blacks and Hispanics in community colleges, the effect of community colleges on the home ownership and value of homes is important. Among the six gender-ethnic groups, only black men are less likely to own a home, relative to similar black men who started at four-year colleges.[41] Low-income students who enrolled in community colleges are also less likely to own a home compared to similar students who enrolled in four-year colleges, although the odds-ratio represents a small gap of only 4.2%. Nonetheless, this provides some evidence for the social reproduction theory of community colleges, in this case, reproduction of inequalities in the acquisition of the most important asset, a home.

The figures for value of home represent the percentage gap in dollars for community college students relative to similar students who enroll in four-year colleges.

[41] An odds ratio of more than 1 indicates a higher likelihood of owning a home, whereas an odds ratio of less than 1 indicates a lower likelihood.

No ethnic or income groups are disadvantaged in value of home. In fact, with controls, white men own homes that are significantly *more* valuable.

There is a tremendous disadvantage in terms of other sources of financial wealth for men from minority ethnic groups. The gap for black males is over 65%. The gap for Hispanic males is almost 34%. With controls, black women have *higher* values of assets if they start their educations at a community college, relative to a four-year college. None of the income groups suffers in terms of financial wealth, again failing to support the argument that community colleges will have worse effects on students from lower socioeconomic backgrounds.

Overall, the above results provide weak support for the social reproduction argument that community college entrants will experience diminished financial rewards, in this case household economic resources measured by household income, home ownership, value of home, and other financial wealth. Overall, community colleges entrants fare well relative to four-year entrants, and this extends to students from all ethnic, gender, and income groups. However, there is some evidence of social reproduction for black and Hispanic men. Among the ethnic groups, Hispanics are the most likely to enroll in community colleges. Hispanic men are disadvantaged on two of the four household economic resources outcomes.

Community college supporters have argued that in order to test social reproduction, researchers should compare community college students to people with high school diplomas as their highest degree, which I will do in the next section. For people unable to enroll in four-year colleges, due to time or money limitations, this is the more relevant comparison.

Community College Entrants Relative to High School Graduates

In this section, the treatment is again community college attendance, although here the comparison is to respondents in the NLSY with no postsecondary experience. First, I look at the effect of entering at the community college level. Compared to respondents with no postsecondary education, community college entrants are advantaged on all four household economic indicators (See Table 4.7). They have higher annual household incomes by $14,725, representing 41.5% in logged income. They are more likely to own a home and have homes of greater values ($39,150). Community college entrants also have greater values of financial wealth ($33,309).

Table 4.7
Household Economic Resources, Community College Entrants and High School Graduates (NLSY)

	Community College Entrants	High School Graduates
Household Income	$59,214.55	$44,490.38
(std)	(40,240)	(32,427)
Owns a Home (%)	69.1	62.8
Value of Home	$158,097.78	$118,947.77
(std)	(128,590)	(108,872)
Other Financial Wealth	$76,603.58	$43,294.96
(std)	(121,478)	(84,802)

However, these observed benefits may not be the result of attending a community college, but rather the more affluent background or higher cognitive skills of students who enroll in community colleges. For this reason, I control for a wide range of background factors, including ethnicity, gender, socioeconomic status of family or origin, academic preparation and performance in high school, aspirations, psychological states, parenthood status, and urban residence (Table 4.8). Again, I am only controlling for characteristics that occur in time *prior* to initial college entry. I do not determine whether community college entrants dropout, graduate, or transfer. In the next section, I will determine whether completion of the AA degree confers additional economic benefits.

Table 4.8
Effect of Entering a Community College compared to No College on Household Economic Resources (NLSY)

	Bivariate Gaps	Estimated Gap from Regression Models	Estimated Gap from Matched Samples
Household Income (logged)	+41.5%***	+15.6%***	+16.2%***
N of cases	4,819	4,819	2,443
Owns a Home	+6.3%***	+3.1%***	+2.4%**
N of cases	5,106	5,106	2,580
Value of Home (logged)	+33.8%***	+13.7%***	+10.7%***
N of cases	3,267	3,267	1,663
Other Financial Wealth (logged)	+79.9%***	+31.0%***	+21.0%***
N of cases	4,055	4,055	2,084

* p<.05 **p<.01 ***p<.001

All bivariate gaps are significant at p<.001. With controls for background factors, community college entrants continue to have higher values on all four indicators then respondents without any postsecondary education (Table 4.8). This is true in the models using regression and the models using propensity-matched samples. Again, the gaps reduce with controls, suggesting that the majority of the observed differences between community college entrants and respondents with no college experience are due to the characteristics students bring in with them, such as coming from families of higher socioeconomic status. Regression models (not shown here) reveal that ethnicity, gender, age, parents' socioeconomic status, and academic performance in high school continue to influence household economic indicators. In fact, although a community college education remains a significant predictor in the regression models, being from a minority ethnic group have larger effects on household economic resources.

Nonetheless, the remaining positive gaps in both the regression models and the matched samples show that there are financial benefits to be gained from attending community colleges, beyond those gained from background characteristics and beyond those commonly studied by community college researchers. Net of other factors, community college entrants have, on average, 16.2% higher household incomes, homes that are 10% more valuable (roughly $10,000 in non-logged dollars), and 21% more in savings and other assets (a gap of over $12,000 in non-logged dollars). Although the gap is significant at p<.01, the gap in home ownership is not particularly socially meaningful.

The previous analyses look at level of college entry, regardless of subsequent educational attainment. Here, I present analyses comparing the associate's degree to the high school diploma to see if, and how much, completing the degree adds to household

economic resources. Values for coefficients on the matched samples are presented in Table 4.9.

Table 4.9
Effect of Completing an Associate's Degree Relative to no College on Household Economic Resources

Outcome	Estimated gaps from the matched samples
Household Income (logged)	+29.5%***
Home Ownership	+3.5%**
Value of Home (logged)	+5.9%*
Value of other Financial Wealth (logged)	+27.9%***

* p<.05 **p<.01 ***p<.001

Three of the four outcomes show even higher returns if community college entrants successfully complete an associate's degree. Associate's degree holders have substantially higher household incomes compared to respondents whose highest degree is the high school diploma (29.5%). There is a significant gap in rate of home ownership, although again the gap is not particularly important at 3.5%. The gap for value of home is significant at p<.05, although it is less than the value for community college *entrants*. Completing an associate's degree confers even more in financial wealth: 27.9% in logged dollars or $17,092 in non-logged dollars. While in most cases completing an associate's degree confers even greater benefits in household resources, community college students still see economic gains even if they drop out without a degree.

Subgroup Comparisons

Of particular importance to social reproduction theorists is the effect of entering a community college on low-income students. Are students from low-income backgrounds able to benefit from enrolling in community colleges in terms of this wide range of economic outcomes? Here, I will also examine the effect of entering a community college, relative to no college, for students of ethnic-gender groups and socioeconomic backgrounds, measured in income quartiles (Table 4.10).[42] Coefficients in Table 4.9 represent the estimated gaps from the sample matched on propensity to attend a community college.

[42] Income refers to the income of the respondent's family or origin.

Table 4.10
Subgroup Comparisons for Community College Entrants compared to No College
(Estimated Regression Coefficients on the Matched Sample)

	Logged Household Income (% dollar gaps)	Home Ownership (odds ratios)	Logged Value of Home (% dollar gaps)	Logged Financial Wealth (% dollar gaps)
White men	-19.9**	.9556	+13.9***	+41.0***
White women	+14.2**	.9165	+2.2	+16.5*
Black men	+15.1	1.359**	+34.6***	+17.3*
Black women	+12.7	1.151	+15.2*	+17.2*
Hispanic men	+24.5**	1.111	+17.9**	+8.3
Hispanic women	+62.1***	1.315**	+12.3*	+45.0***
Lowest income quartile	+19.2*	1.310***	+20.7***	+33.3***
Second income quartile	+14.4*	1.052	+3.8	+16.7
Third income quartile	+27.6***	1.100	+7.7*	+26.8***
Highest income quartile	+4.7	.9918	+11.5**	+11.9

* p<.05 **p<.01 ***p<.001

Relative to respondents with high school diplomas, members of each ethnic-gender group benefit from attending community colleges on at least some of the household economic outcomes. White male community college entrants are the only group to have significantly *lower* household incomes. While black men and women have large positive coefficients, the gaps are not statistically significant.[43] The gap in homeownership was negligible on the whole sample, although analyses on ethnic-gender groups show significant *increases* in rates for black males and Hispanic females, each odds-ratio representing approximately a 6-7% higher probability of owning a home. All community college entrants, with the exception of white females, benefit in terms of value of home.

Finally, with the exception of Hispanic males, all groups experience a significant increase in assets from attending a community college.[44] Hispanic women and men, who attend community colleges in large numbers, benefit greatly in terms of household income. Hispanic men previously showed the largest gaps when compared to four-year entrants. However, relative to no postsecondary attainment, Hispanic men benefit greatly in terms of household income and value of home.

Community colleges are most widely criticized for reproducing class inequality (Brint and Karabel 1989, Bowles and Gintis 1976). Community college entrants in the lowest income quartile for family or origin (less than $9,000 in 1979 dollars) benefit from attending community colleges on all four household economic outcomes. In fact, students from low-income backgrounds are the only income category to benefit from all four

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[43] The coefficient from the corresponding OLS regression for black women is statistically significant at $p<.05$.

[44] The numbers in each group drop so we should interpret coefficients and significance levels with caution. Nonetheless, the smallest category, Hispanic men, still represents over 200 cases.

outcomes. There does seem to be some reproduction for students from the second lower income group, the 25-50% range. However, the benefits to blacks, Hispanics, and low-income students fail to support the argument that community colleges reproduce inequality among the most disadvantaged students.

Conclusion

Community colleges enroll our more disadvantaged students. It is crucial to know the consequences of initially enrolling in community colleges on a wide range of economic outcomes beyond personal earnings and occupational prestige. Outcomes such as household income, equity, and savings are crucial for securing stable, middle class lifestyles.

Going back to the original overarching question, are students who enroll in community colleges doomed to lower financial rewards? Earlier analyses showed that people who initially enroll in community colleges do not suffer in terms of personal earnings relative to students who enroll in four-year colleges, despite arguments by critics in the 1970s and 1980s. Furthermore, relative to respondents who did not enroll in college, community college students earn more and hold jobs with higher occupational prestige scores.

Questions of economic well being and inequality must take into account household economic resources. The analyses presented in this chapter show that there are clear benefits beyond individual economic resources for students who are unwilling or unable to enter a four-year college. Community colleges pay off in other kinds of economic resources, resources that more accurately capture standard of living and future

mobility. The community college "effect" discussed by critics does not lead to diminished economic rewards. Relative to no college, there are clear benefits to community college attendance.

Although the two comparisons presented, community college entrants compared to four-year entrant and community college entrants compared to high school graduates, are two separate analyses,[45] it does not seem to be the case that community colleges are intermediate between high school and four-year colleges on these economic outcomes. Rather, community college effects seem closer to four-year college effects than to high school diploma effects. Controlling for the background characteristics of students, respondents who enrolled in community colleges did better compared to respondents with no college on all of the economic resource outcomes: household income, home ownership and value, and other sources of financial wealth.

However, unlike the "community college as intermediate" theory, respondents who enrolled in community colleges had similar values on all of the household incomes; only in the regression model was there a difference in other kinds of financial wealth such as stocks and savings. Certainly structural forces beyond college influence these outcomes. Financial wealth is less responsive to sudden interventions and can take generations to build up (Spilerman 2000). Ethnic differences in rates of home ownership and value of property values are also dependent on housing discrimination and segregation. The parity on these household outcomes, household income, home ownership, value of home, and value of financial assets, are important for movement into the middle class and for the environments in which parents raise children. The next

[45] Because of the use of propensity matching, it was not appropriate to include a set of dummies for high school graduate, community college entrant, and senior college entrant in one regression model predicting each outcome. The matching technique requires testing one treatment at a time.

chapter will examine how children of mothers who attended community colleges fare in terms of educational outcomes.

Chapter Five:
Community College Effects on Children's Outcomes

"Improving educational attainment, especially for those whose parents have relatively low levels of schooling, would reduce intergenerational transmission [of economic status] both directly, because of the impact of schooling, and perhaps also indirectly by providing a more open network of groups membership and mating choices that are less homogenous by income class" (Bowles et al. 2005, 21).

The previous chapters showed that community college students benefit economically from attending community colleges, both in terms of individual occupational attainments and household economic resources. This is true even when community college students are compared to similar four-year college students. In this chapter, I expand the study of community college effects even further by examining outcomes in the second generation. Never before have these outcomes been studied in relation to community colleges.

Numerous studies have documented the positive intergenerational effects of parental socioeconomic status (Blau and Duncan 1967, Duncan, Featherman, Duncan 1972, Sewell and Hauser 1975, Featherman and Hauser 1978, Becker 1981, Becker and Tomes 1986, Corcoran et al. 1992, Haveman and Wolfe 1994, Duncan and Brooks-Gunn 1997, Hertz 2005, Attewell and Lavin forthcoming). The earliest models were limited to showing a simple association between father's education and son's education and occupational status. Researchers later extended these models to include mother's educational attainment and daughter's outcomes, and included more variables to the

models such as family background, parental IQ, parenting styles, marital stability, number of siblings, and school and neighborhood characteristics.

Parental education proved to be an important predictor of children's educational and occupational attainments. Parental education had a significant and *independent* effect on children's success on a wide range of outcomes, even with a variety of controls for parents' socioeconomic status and cognitive ability. Most importantly, these models showed that parental education influenced children's outcomes *net* of parents' social class (Parcel and Menaghan 1994, DiMaggio 1982, 2001). In fact, most found *mother's* education to be one of the single most important predictors of children's subsequent educational attainment (Farkas 1996).

However, none of these empirical studies distinguished between types of college completed by parents and most defined "college education" as the bachelor's degree.[46] For example, Haveman and Wolfe (1994) used the following set of dichotomous variables to measure the effect of mother's education on children's outcomes: high school graduate, some college, and college graduate. They did not distinguish between community colleges and four-year colleges. Likewise, Attewell and Lavin (forthcoming) compare children of mothers with some college (two- or four-year) and bachelor's degrees to children of mothers with no postsecondary schooling.

There are several reasons for this. At the time of the early intergenerational studies, the number of community college students was relatively small. Large datasets such as the Census did not distinguish between some college and the associate's degree until 1992. Many also considered the BA degree the minimum requirement for a decent-paying job. Finally, many considered the benefits gained from attending college, such as

[46] Furthermore, many of the early studies only studied the transmission from fathers to sons.

critical thinking skills, middle-class values and linguistic styles, to be typical only of four-year colleges. Whether one thinks parents pass on educational advantages to their children through greater financial resources, improved social networks, or more successful parenting practices, parents with four-year college educations and BA degrees should be able to pass on more advantages to their children given their additional years of schooling.

This chapter asks whether mothers who attend community colleges can pass on to their children some of the same advantages usually attributed to four-year colleges. How will the children of mothers who attended community colleges do in school and on cognitive tests relative to children whose mothers who attended four-year colleges and relative to mothers without any postsecondary schooling? Because children in the NLSY dataset are too young to have their own measures of socioeconomic status, I am considering their educational histories as signs of future upward mobility and cognitive value added (see Appendix A for descriptives). I examine the following children's outcomes: cognitive test scores, behavior in school, school persistence, college preparatory curriculum, and college attendance.

I then ask how community colleges affect home environments. Parental education influences children's success in school through a variety of mechanisms, including greater economic resources in the home, more affluent schools and neighborhoods, and positive peer influences. Here, I engage with a large body of literature on *parenting*. Research shows parental education influences parenting styles, some styles leading to

children's success in school and in the workplace (Gans 1962, Lareau 1989, 2003, Furstenberg et al. 1999).[47]

Borrowing from the concept of cultural capital, defined as the "habitus" of cultural demeanors, knowledge, and interests learned from the family and other role models (Bourdieu and Passeron 1977, Bourdieu 1979), parents with more education are more likely to introduce their children to cultural activities such as museums and classic literature (DiMaggio and Mohr 1996, Hirsch 1987, Bourdieu 1986). Parents with more education have greater social capital, the collective value of social networks and the tendency for people in a network to do things for each other (Coleman 1988, Lin 2001, Portes 2000, Putnam 2000). Educated parents talk and read to their children more, improving reading skills that influence later educational success (Farkas 1996, Hart and Risley 1995, 1999). In fact, differences in *cognitive ability,* which many have argued have a genetic basis, are largely explained by characteristics of the home situation and particularly mother's education and cognitive skill level and her support for child's cognitive development, such as how much time she spends reading to her child (Parcel and Menaghan 1994, Duncan and Brooks-Gunn 1997).

Again, the influence of mother's *community college* education on parenting is not known. Parents with even small amounts of college at the community college level may be able to pass on vital information to their children about the college application process, particularly compared to families where neither parent is college educated. According to Rosenbaum (1976) and McDonough (1997), first-generation college

[47] Because parenting variables have not been examined in relation to community colleges, I must at this time leave aside an important caveat in this literature: Parenting styles must be linked to the larger social structure and have differential effects on children's outcomes depending on school type, neighborhood characteristics, and ethnicity (Sorensen and Morgan 1999, Teachman et al. 1997, McNeal 1999).

students lack important information about the college application process. In his qualitative work with high school students, Rosenbaum (1976) recounts one student's belief that he could simply walk down the block to Boston University and enroll a week before classes started. Non-college educated parents may also lack important information about the process of applying for financial aid, which is particularly detrimental to college attendance for students from lower socioeconomic backgrounds (Kane 1999). In contrast, Skinner (2000) recounts some parents' obsession with their children's high school grades, application to, and acceptance into prestigious colleges.

Community college attendance has now reached almost 50% of college enrollments. More importantly, higher proportions of low-income and minority students enter postsecondary schooling at the community college level. This makes the consequences of the decision to enter a community college important to the question of future socioeconomic and ethnic disparities.

Community colleges have been widely criticized for reproducing inequality from one generation to the next, yet no one has ever looked at the mobility of the succeeding generation. Earlier chapters showed community colleges pay off in terms of improved personal earnings and household economic resources, even for the most disadvantaged students. However, a successful strategy for alleviating poverty should be long-term and intergenerational. It is current poverty policy to provide the poor with quick training, often leading to low paying and low skilled jobs. This became more formalized after the 1996 welfare reforms (Allen 1998, Jenkins and Fitzgerald 1998). This does not guarantee that beneficiaries or their children will be lifted out of poverty.

If research suggests that community colleges are successful in increasing educational and occupational attainments of their enrollees as well as sufficiently improving the life chances of their children, then community colleges can occupy an important place in poverty programs. Rather than ensuring that children inherit their parents' class position, community colleges may play an important part in enhancing long-term intergenerational upward mobility.

Models and Variables

Measures of children's outcomes come from the NLSY79 – Children and Young Adults File (NLSY79-Child). The NLSY-Child File links 11,211 children to their mothers in the NLSY79-Adult File. The dataset provides detailed information on the children's educational progress. In addition, additional surveys collected information from mothers and children. These children are a nationally representative cross-section of children born to mothers between the ages of 25 and 32 in 1990. They range in age from less than one to 29 years old and the average age is 14.[48] Based on consistent data, 9,192 children are included in the following analyses. Among children whose mothers entered college (n=3,062), 42.7% entered at the two-year college level.

I compare children whose mothers attended community colleges with mothers who attended four-year colleges and mothers with no postsecondary schooling. We also have no information about the effect of the associate's degree on children's outcomes;

[48] Twenty-three percent of the children are white males, 23.6% are white females, 14.3% are black males, 15% black females, 8.8% are Hispanic males, 8.8% are Hispanic females, and 3.3% are males of "other" ethnicity, and 3.3% are females of "other" ethnicity.

therefore, I also compare the associate's degree to the high school diploma and the bachelor's degree.

The first two outcomes capture child's early cognitive ability. These outcomes measure "cognitive value added." Early scores on cognitive tests are highly correlated with later test scores and educational attainment (Farkas 1996, Duncan and Brooks-Gunn 1997). Reading and math skills are also important for later earnings and skill level of occupation. Gaps in measured cognitive skill explain a large portion of the gap in wages (Farkas 1996, Kohn 1969, Kohn et al. 1983). The earliest measure of vocabulary and verbal ability is the *Peabody Picture Vocabulary Test* (PPVT), administered to children between the age of three and five. The *Peabody Individual Achievement Test* (PIAT) measures skills in mathematics, reading recognition, and reading comprehension. The outcome labeled "Early PIAT" represents test scores for children under the age of seven. [49] Here, I combine reading and math scores. Both scores are age-standardized for national children of the same age. I converted each to z-scores to get changes in standard deviations.[50]

The next set of outcomes refers to behaviors associated with school success. Success in school is not only determined by ability but also by habits and skills, including absenteeism, completion of homework, class participation, school effort, organization, disruptiveness, even appearance and dress (Farkas 1996, Groves 2005). In fact, differences in these skills, habits, and styles explain ethnic and socioeconomic gaps in educational success (Farkas 1996). The *Behavioral Problems Index* (BPI) is an index

[49] I chose the early version of the PIAT because of the larger number of cases available.

[50] According to Rosenthal and Rosnow (1991), a change in standard deviation of 0.5 or higher is interpreted as a large effect, 0.2 to 0.5 a medium effect, and less than 0.2 a small effect.

created for the NLSY that measures mothers' response to 28 ordinal questions relating to her child's antisocial, anxious or depressed, headstrong, hyperactive behavior, immaturity, or conflict or withdrawal from peers. I use the raw score for children between the ages of 6 and 10. This outcome is also z-scored to get changes in standard deviation. I also predict whether parents were ever required to come to school to deal with behavioral issues, whether the child ever repeated a grade, whether the child ever dropped out of high school, percentage in a college preparatory track in high school, and college entry.

The final set of outcomes capture home environment. The two measures of parental support for intellectual development come from mother's reports and interviewer observations in the 1986, 1988, 1990, and 1992 waves of the NLSY Children File, known as the Home Observation for Measurement of the Environment Short Form (HOME). *Early Home Cognitive Stimulation* measures items such as mothers' outings with her child, level of verbal communication, style of teaching, and the presence of resources such as books and newspapers.[51] *Early Home Emotional Scale* measures mother-child interaction for children under the age of six. For example, interviewers observe how often the mother talks to her child and how she disciplines her child. While the emotional scale combines seemingly disparate events such as extent of parent-child interaction and form of discipline, items in both home environment scales correlate highly and are commonly used in research on child development (Caldwell and Bradley 1984, Elardo and Bradley 1981). There is an extensive literature on the effect of these scales on improved child's intellectual environment (Guo and Harris 2000, Baharudin and Luster 1998, Gottfried et al. 1998). While previous research shows both scales to correlate with parental education

[51] I use the early versions of the stimulation variables due to the larger number of cases.

(Parcel and Menaghan 1989, Attewell and Lavin forthcoming), here I am testing their relationship specifically to mother's *community college* attendance.

The next measure of parental involvement is a dichotomous variable that asks the mother whether she and her spouse/partner know all of their children's friends and their friends' parents. This variable captures a potential for social capital and has been shown to improve children's schooling outcomes (Carbonaro 1998, Coleman 1988). I then measure how often mother and child talk about school matters. Parents differ in how involved they are with their children's education. Although this measure corresponds to children between the ages of 6 and 10, it may signal future involvement. Can community colleges significantly increase these kinds of parent-child interactions?

Finally, I examine the effect of community college attendance on marital and fertility outcomes. Age at parenthood, single parenthood, and education of spouse or partner influence the amount of resources, physical and emotional, available to children. Age of mother when she has a child has important effects on children's life chances (Hogan and Kitagawa 1985, Thornton 1991). Single parenthood, even net of family income, negatively influences behaviors and psychological outcomes, although income is more important for educational attainment (MacLanahan and Sandefur 1994, Mayer 1997, Carlson and Corcoran 2001). Women that are more educated have children at later ages (Barber 2000, Marini 1984). Better-educated women are now more likely to marry, marry at later ages, and have higher rates of marital stability (Sweeney 2002, South 2001, Axinn and Thornton 1992). There is also a strong correlation between the educational levels of spouses (Smits 2003, Blackwell and Lichter 2000, Lewis and Oppenheimer 2000, Mare 1991).

Despite the fact that education influences marital and fertility decisions, there has been a complete absence of research into the effect of two-year college attendance on marriage and fertility behavior in the community college literature. As far as I know, no one has ever examined the two-year college in relation to marital and fertility patterns. Unlike other analyses in this chapter, these outcomes come from the NLSY79-Adult File and apply to men and women. I constructed "age at first child" by going through each survey for the first mention of a biological child. Single parenthood is a dummy variable measuring whether the respondent ever had to take care of his or her child as a single parent. I defined respondents as single parents if they had children but never married or experienced a marital disruption while their child lived at home. I created spouse or partner's education by taking the highest grade of the person the respondent identified as their spouse or partner in the latest survey.

Mother's education refers to her status *before* measurement of the child's outcome. I have information about the level of college she entered first, a community college or a four-year college. I also have the year she first entered college. With these two variables, I created an educational status variable (no college, community college, or four-year college) for various years corresponding to each outcome. In cases where a child's outcome spans a series of years, such as whether the child ever repeated a grade in school, I used mother's education when the child was approximately seven.[52] For marital and fertility outcomes, education is education the year preceding the event, whether it be parenthood, marriage, or marital dissolution.

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[52] This ensures that the treatment precedes the outcome. Although I may miss some women who enrolled in college after the child was seven, it is more likely that parental education takes time to influence a child's outcomes, so an early measure is more valid than a measure that occurred right before the child's outcome. Furthermore, Duncan and Brooks-Gunn (1997) find that poverty in early childhood is highly predictive of later children's outcomes. This may apply to parental education as well.

As in earlier chapters, I present coefficients from regression models and matched samples. Community college entrants are more likely to come from minority backgrounds, to be from lower socioeconomic families, and are less academically prepared than students who enter four-year colleges. The following variables are controls in the regression models: mother's ethnicity (black, Hispanic, other, and white as the reference category), gender of child, mother's socioeconomic background (measured by her parents' education, income, and occupational prestige scores), her grade point average in academic courses in high school, her score on the AFQT, and her scores on the Pearlin Mastery Scale and the Self-esteem Scale. For the propensity-matched analyses, the regression predicting the respondent's propensity for the treatment (in this case, likelihood of entering a community college) contains these variables plus interactions and dummies to test for non-linear relationships. For analyses looking at *level of entry* effects, I match mothers on their propensity to attend a community college, relative to either four-year college entrants or mothers with high school diplomas as their highest degree. For the analyses comparing the value of the associate's *degree* relative to the high school diploma and the bachelor's degree, I match mothers on their propensity to get an associate's degree. I require children to match on their ethnicity and gender.

Findings

Community College Entrants Relative to Four-Year College Entrants

Here, I compare mothers who attended community colleges with mothers who attended four-year colleges. Slightly less than 43% of mothers who attended college entered at the community college level (n=3,062). Simple bivariate descriptives show that

children whose mothers attended community colleges do worse on most of the second-generation outcomes (Table 5.1). They score lower on the cognitive scales, the PPVT and PIAT, both showing medium sized effects. They are disadvantaged on three of the five schooling behavior measures: the Behavioral Problems Index, the percentage that required parents to come to school to deal with behavioral programs, and the percentage that repeated a grade. For instance, 13% of children whose mothers attended community colleges repeated a grade in school, compared to 9.0% of children whose mothers attended four-year colleges. Children of community college mothers are as likely to drop out of high school (10% of children in each group) and to be in the college prep track in high school (49% versus 50%) percent. Although the number of children eligible to enter college (among high school graduates) is too small for analysis (n= 324), being in the college track suggests that they will be as likely to enter college in the future.[53]

[53] Caution must be used with any of the outcomes for older NLSY children: The mean age is 14, so high school variables include only the older children who are biased towards children of women who gave birth at a younger age.

Table 5.1
Effect of Entering a Community College compared to a Four-year College on Second-Generation Outcomes

	Bivariate Gap	Estimated Gap from Regression Models	Estimated Gap from Matched Samples
Cognitive Ability			
Early PPVT (std units)	-.3612***	-.0840***	-.0649 n.s.
N of cases	1,430	1,430	866
Early PIAT (std units)	-.2687***	-.0926***	-.0959***
N of cases	1,991	1,991	1,190
School Behaviors			
Behavioral Problems Index (std units)	+.1173***	+.0605**	+.0339 n.s.
N of cases	2,112	2,112	1,275
Parents called to school (%)	+2.11***	+0.66 n.s.	-1.00 n.s.
N of cases	2,170	2,170	1,302
Child repeated a grade (%)	+3.69***	+0.5 n.s.	-0.106 n.s.
N of cases	2,171	2,171	1,250
Ever dropped out of high school (%)	-0.4 n.s.	-4.09***	-7.2***
N of cases	870	870	507
College preparatory track (%)	+0.83 n.s.	+8.1***	+7.9***
N of cases	786	786	463

*p<.05 **p<.01 ***p<.001

The multivariate models, using traditional regression models and samples matched on propensity to enroll in a community college, allow me to determine what portion, if any, of the observed gaps are due the community college education itself, or to other influences such as mother's socioeconomic background or cognitive skill. Mothers who attend community colleges are disadvantaged on many outcomes; they came from lower socioeconomic backgrounds, were older when they entered college, and were more likely to be independent from their parents when they were attending college.

With controls for mother's characteristics, the gaps in cognitive scores reduce substantially to small effect sizes (Table 5.1). This means that a larger portion of the gap in child's cognitive skill can be attributed to mother's background than to her level of college entry. Nonetheless, a small gap in child's early verbal, reading, and math skills remains. The gap in PPVT becomes non-significant in the matched sample, although the number of cases fell during the matching process, potentially reducing statistical power.

The story is different for schooling behaviors. Although children whose mothers attended community college score higher on the behavioral problems index, are more likely to require parents to come to school because of behavioral programs in school, and are more likely to repeat a grade, these effects are explained entirely by mother's background characteristics. Once I control for mother's background characteristics in the matched samples, there are non-significant gaps. The gap in behavioral problems index is still statistically significant at $p<.01$ in the regression model, although even using the technique, the gap is small in effect size and is reduced even more in the matched sample.

Although there are non-significant bivariate gaps for the percentage of children that dropped out of high school and were in the college preparatory track, the gaps

change direction and become statistically significant with the introduction of controls. With controls for mother's background characteristics, children of community college mothers are *less* likely to drop out of high school (-7.2%) and *more* likely to be in the college prep track (+7.9%).

With the exception of small gaps in cognitive test scores, children of community college mothers get similar advantages as do children of four-year college mothers *once background factors are controlled*. This means that observed differences in ability, behavioral problems, and persistence in school cannot be attributed to mother's attendance at a community college instead of a four-year college. These results show that mother's education, even at a community college, can lead to many of the same educational benefits in her children, benefits that have been primarily attributed to four-year colleges.

Next, I examine *mechanisms* previously identified as having important influences on children's educational outcomes (Table 5.2). The models test the effect of mother's community college education, relative to a four-year college education, on cognitive and emotional stimulation in the home, parental involvement, and marriage/fertility characteristics. The models are simple; I treat each home environment measure as an outcome and level of college entry as the predictor or treatment.[54] Mother's college education, regardless of the level of college, might positively influence the culture of the home in ways not measured here, known as the set of "skills, habits, and styles" associated with improved children's school outcomes (Farkas 1996, Lamont and Lareau 1988). "College" may also raise the importance of schooling in the home in a variety of

[54] Nor do I look at investment per child, controlling for number of siblings. Future research will explore the exact paths by which mothers who attend community colleges pass on advantages, the effect of structural influences such as money and neighborhoods, and the relative importance of each influence.

ways. Although I did not test it here, the data show mother's aspirations for her child's education rises with her level of education.

Table 5.2
Effect of Entering a Community College compared to a Four-year College on Home Environment Outcomes

	Bivariate Gap	Estimated Gap from Regression Models	Estimated Gap from Matched Samples
Early Home Cognitive Stimulation (std units)	-.2557***	-.1398***	-.1667***
N of cases	2,745	2,745	1,622
Early Home Emotional Scale (std units)	-.1561***	-.0425**	-.0331 n.s.
N of cases	2,720	2,720	1,609
Knows child's friends and parents (%)	-5.75***	-3.4***	-2.77 n.s.
N of cases	2,289	2,289	1,377
Talks to child about school matters	+.003 n.s.	+.005 n.s.	-.004 n.s.
N of cases	1,189	1,189	692
Age at birth of child (years)	-2.3***	-0.8***	-0.8***
N of cases	3,714	3,714	2,336
Percent ever a single parent to child (%)	+12.5***	+5.2***	+5.3***
N of cases	4,934	4,934	3,085
Highest grade completed by spouse/partner	-1.5***	-0.72***	-0.60***
N of cases	3,325	3,325	2,025

*p<.05 **p<.01 ***p<.001

Children whose mothers attend community colleges score lower all almost all of the measures of home environment. Children grow up in homes with less cognitive and emotional stimulation. The gap in cognitive stimulation is larger (-.2557), representing a medium-sized gap in standard deviation. Their parents are slightly less likely to know their friends and their friends' parents, 51.4% versus 57.1%, a gap of 5.7%.

In terms of marital and fertility outcomes, community college entrants have children an average of 2.3 years earlier than four-year college entrants. Because college entry must precede the outcome, which is in this case parenthood, these findings apply only to respondents who had children after they entered college and do not represent the full sample of college entrants.[55] On this select sample, the average age at parenthood is 24.5, compared to 27.6 for four-year college entrants. There is a large gap in rate of single parenthood. Thirty-five percent of community college entrants raised a child as a single parent, compared to 22% of four-year entrants, a gap of 12.5%. There is a small but significant gap in education of spouse or partner of 1 ½ years. The spouses or partners of community college entrants average 13.7 years, compared to 15.2 for four-year college entrants.

The only measure to show a non-significant gap is the measure for how often parents talk to their child about school matters. This variable is of great interest to me; I pose that any college experience, even at the community college level, can lead to more interest in children's schooling. The findings suggest that level of college entry does not influence the level of that involvement. However, it is hard to know the circumstances of that involvement without more information. As Domina (2005) points out, going to your

[55] This may be problematic because more community college entrants had children before entering college, therefore from more are eliminated from the analysis (31.8% versus 17.5%).

child's school or talking to your children about school matters can be a positive involvement or it could be a sign of a problem. Qualitative research is needed to further explore the relationship of a community college education on the nature of parents' involvement with their child's education.

With controls, there are persistent gaps in home cognitive stimulation, an important predictor of later school success. The gap in standard deviation (.1667) represents a small change; nonetheless, it is highly significant. The regression model, not shown here, reveals that community college attendance is an important predictor. The remaining gap in emotional stimulation is quite small with controls, and even with over 1,600 cases, is not significant in the matched sample. Likewise, the remaining gap in likelihood of knowing friends and friends' parents is small with controls and non-significant in the matched sample.

Background characteristics cannot explain bivariate gaps in marital and fertility behaviors, although the remaining gaps are small. Community college entrants who entered college without children have children on average one year earlier, they are 5.3% more likely to be single parents, and their spouses or partners have slightly over a half-year less education. Nonetheless, all of these gaps are significant and suggest that level of college entry influences marital and fertility decisions. As seen in the analyses of earnings and other economic resources, background characteristics of mothers explain larger portions of the observed gaps than level of college entry.

In most cases, level of college entry does not have an independent effect on the child's outcome. For two important measures, however, cognitive skill and home cognitive stimulation, community college attendance has a significant and independent

effect. Cognitive ability or skill level may be less responsive to interventions such as higher education. Bowles and associates (2005) do not find evidence that IQ is genetically transmitted from parents to children. Perhaps the education gained at four-year colleges more effectively translates into improved reading and math skills among children. It is likely that the more vocationally oriented curriculum found among community college students is less conducive to stimulating early cognitive skills.

Mothers who attend community colleges are less likely to complete a degree, as we saw in Chapter 3. A regression controlling for mother's subsequent educational attainment can determine how much of the "community college effect" is due the to lower rates of degree attainment found among community college entrants, and how much is due to the kind of education obtained at community colleges (Table 5.3).

Table 5.3
Effect of Entering a Community College compared to a Four-year College on Selected Second Generation Outcomes, Controlling for Educational Attainment (Unstandardized OLS Regression Coefficients)

	Early PIAT (std units)	Early Home Cognitive Stimulation (std units)
Constant	-.381***	-.288***
Mother entered a community college	-.065**	-.121***
Ethnicity[a]		
Black	.104***	-.328***
Hispanic	.100**	-.134***
Other	.039	-.022
Male	-.141***	-.064***
Age of mother when she had child	.004	-.028***
Mother's socioeconomic background		
Occupational prestige of parents	.002	.003
Income of family of origin	.009	.044***
Educational attainment of parents	.062***	.066***
Mother's college admissions average in high school	.069***	-.007
Mother's AFQT80	.008***	.004***
Mother's self-esteem scale	-.149***	.203***
Mother's mastery scale	.145***	.204***
Mother's educational attainment[b]		
Associate's degree	-.042	.013
Bachelor's degree	.038	.112***
Advanced degree	.181***	.016
Adjusted r-square	.1051	.1802

[a] Reference category is white.
[b] Reference category is some college, no degree.
*p<.05 **p<.01 ***p<.001

The above regression models show that significant negative gaps remain even with a set of controls for mother's educational attainment. Mother must have completed her degree *before* the measurement of the outcome. Starting college at a community college continues to influence child's score on the PIAT test and the amount of cognitive stimulation the child receives in the home. While controlling for educational attainment lowers the standard deviation gap in PIAT score from -.0926 to -.065, each representing small effect sizes, the gap is statistically significant at $p<.01$. Likewise, the gap in home cognitive stimulation reduces slightly from .1667 to .121. Again, this represents a small gap in standard deviation; nonetheless, it remains highly statistically significant. These findings suggest that community colleges are inferior to four-year colleges in influencing child's cognitive environment and math and reading skills.

In summary, children of mothers who enrolled first in community colleges score lower on a measure of cognitive ability, the PIAT, a measure of early math and reading skills. While there is evidence of *cognitive* skill differences, children do not differ in *behaviors* associated with improved schooling outcomes. Mother's level of college entry does not have differential effects on child's behavioral problems or interrupted schooling. In fact, with controls for mother's background, children of community college mothers are less likely to drop out of high school and more likely to be in a college preparatory track. Furthermore, even though mothers who enroll in community colleges score lower than mothers who enroll in four-year colleges on early cognitive stimulation in the home, this does not seem to affect negatively her child's academic performance and persistence.

Community College Entrants Relative to High School Graduates

In this section, I compare children whose mothers attended community colleges to children whose mothers did not attend any college (Table 5.4). If community colleges are a potential *long-term* solution for low-income women and their children, this may be the more relevant comparison. These mothers may not have the time or money to enroll in four-year colleges. Here, I ask whether attending a community college, relative to no college, can lead to positive intergenerational outcomes.

Children of mothers who enrolled in community colleges score higher on most second generation outcomes. The first two outcomes measure cognitive ability. The gap on the PPVT (.2497) and PIAT (.2177) tests represent medium-sized gaps. Children score significantly higher on all schooling behavior outcomes, with the exception of mother going to school to deal with her child's behavioral problems. Relative to mothers with no postsecondary schooling, children whose mothers attended community colleges are 11.42% less likely to repeat a grade and 7.45% less likely to drop out of high school. In fact, the absolute percentages show that children of non-college educated mothers are almost twice as likely to repeat a grade in school and to drop out of high school.

Table 5.4
Effect of Entering a Community College compared to No College on Second Generation Outcomes

	Bivariate Gap	Estimated Gap from Regression Models	Estimated Gap from Matched Samples
Cognitive Ability			
Early PPVT (std units)	+.2497***	+.0137 n.s.	+.0316 n.s.
N of cases	2,497	2,497	1,047
Early PIAT (std units)	+.2177***	+.0775***	+.0560*
N of cases	3,501	3,501	1,444
School Behaviors			
Early Behavioral Problems Index (std units)	-.1421***	+.0344 n.s.	+.0013 n.s.
N of cases	3,910	3,910	1,548
Parents called to school (%)	-1.24 n.s.	+2.00 n.s.	+2.2 n.s.
N of cases	3,909	3,909	1,558
Child repeated a grade (%)	-11.42***	-2.48***	-1.43 n.s.
N of cases	3,942	3,942	1,566
Ever dropped out of high school (%)	-7.45***	-4.84***	-6.53***
N of cases	1,714	1,714	782
College preparatory track (%)	+13.13***	+7.03***	+7.75***
N of cases	1,602	1,602	714
Entered college (%)	+15.39***	+9.77***	+9.57***
N of cases	770	770	343

*p<.05 **p<.01 ***p<.001

There are substantial gaps in college preparatory track and college entry as well. Almost 50% of community college children are in the college preparatory track compared to 36.7% of children whose mothers have not attended college. This represents a gap of 13.1% (Table 5.4). The figures for college entry are striking; 66.3% of children of mothers attended community colleges enroll in college, compared to 50.9% among children whose mothers did not attend college. This represents a gap of over 15%.[56]

However, with controls for background factors, these gaps reduce substantially, suggesting that much of these observed gaps are due to the characteristics of mothers. In terms of cognitive performance, the PPVT becomes non-significant. Net of mother's background characteristics, there is a small but significant improvement in math and reading ability, measured by the PIAT. Community college does not have a significant effect on behavioral problems, measured by the behavioral problems index and behavioral problems that require parents coming to school. There is a significant effect on likelihood of child repeating a grade in the regression model, although it is not particularly meaningful and becomes non-significant in the matched model.[57]

There are, however, large positive gaps on the other schooling outcomes. Having a mother who attended a community college significantly decreases child's chance of dropping out of high school: -4.84% in the regression model and -6.53% in the matched model. It also significantly increases child's chances of being in a college preparatory track in high school: +7.03% in the regression model and +7.75% in the matched sample.

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[56] This model includes children who graduated high school. The small number of cases makes the figure from the matched sample less reliable.

[57] It is likely this figure would not be statistically significant even if there were more cases in the matched sample, although the sharp drop in cases from the regression model to the matched sample could account for the loss of significance.

Children are also more likely to enroll in college themselves (+9.77% and +9.57%), although the number of cases is relatively small. All of these schooling behaviors are highly significant at p<.001 even in the matched sample.

As we saw in the previous section comparing community college and four-year entrants, we again see small effects of mother's community college education on child's *cognitive* skills. However, mother's education, even at the community college level, proves to have a larger positive effect on her child's educational *behaviors*.

Now I turn to commonly studied mechanisms for the transmission of educational advantages to children. Research has shown that college educated mothers are more involved in their child's schooling and provide more culturally enriched home environments (Farkas 1996, Duncan and Brooks-Gunn 1997, Lavin and Attewell forthcoming). Here, I ask whether we can attribute these same practices to mothers who attend community colleges.

Table 5.5 shows that children whose mothers attended community colleges benefit in terms of all of the measures of home environment, compared to children whose mothers graduated high school but did not complete any postsecondary schooling. Children live in homes with greater cognitive (+.2795) and emotional support (.1815) and their mothers are more involved with their friends (+5.33%) and their schooling (+5.41%).

Respondents who attend community colleges also benefit in terms of marital and fertility outcomes, although the gaps are small. Community college students delay

parenthood by 1.5 years, are 7.4% less likely to be single parents to their children, and on average marry spouses that are slightly more educated by 1.13 years.[58]

[58] Because the comparison is to high school graduates, I include only respondents who had a child after they graduated high school (for high school graduates) or entered college (for community college entrants).

Table 5.5
Effect of Entering a Community College compared to No College on Home Environment Outcomes

	Bivariate Gap	Estimated Gap from Regression Models	Estimated Gap from Matched Samples
Early Home Cognitive Stimulation (std units)	+.2795***	+.0926***	+.1100***
N of cases	4,621	4,621	1,912
Early Home Emotional Scale (std units)	+.1815***	+.0402**	+.0843***
N of cases	4,603	4,603	1,899
Knows child's friends and parents (%)	+5.33***	+1.81 n.s.	+0.81 n.s.
N of cases	4,149	4,149	1,681
Talks to child about school matters	+5.41***	+5.24***	+4.60*
N of cases	1,579	1,579	769
Age at birth of child (years)	+1.5***	+0.87***	+0.74***
N of cases	4,089	4,089	2,108
Ever a single parent to child (%)	-7.4***	-3.8***	-3.4***
N of cases	5,107	5,107	2,580
Highest grade completed by spouse/partner (years)	+1.13***	+0.55***	+0.57***
N of cases	3,150	3,150	1,621

*p<.05 **p<.01 ***p<.001

With controls in regression models and matched samples, most of the gaps remain, although again, mother's background characteristics explain large portions. Only the gap in "mother knows child's friends and their parents" becomes non-significant in the regression and matched models. Attending a community college influences the amount of cognitive and emotional support in the home, net of mother's background characteristics, although the gaps represent small effect sizes in the regression and matched samples (.1100 and .0843 in the matched samples, respectively). Mothers who attend community colleges are more likely to talk to their children about school matters net of her background characteristics, although again the gap of 4.6% is small.

As in the previous comparison to four-year college entrants, community colleges influence respondents' marital and fertility behaviors. Community college students delay parenthood by slightly less than a year, are slightly less likely to raise children as single parents, and have slightly more educated spouses or partners. The remaining gaps are small, but these figures reflect the portion of the gap that can be attributed to community college attendance.

In summary, for mothers unable or unwilling to attend a four-year college, attending a community college leads to benefits for the second generation. Net of background characteristics, there is a positive effect on children's verbal and math scores, measured by the PIAT test. There are positive effects on children's schooling behaviors; children are less likely to drop out of school, are more likely to enroll in the college preparatory track in high school, and are more likely to attend college. These improved schooling outcomes suggest improved economic gains and future upward mobility.

Children whose mothers attended community colleges were raised in homes with greater cognitive and emotional stimulation, compared to mothers without a college education. Their mothers were slightly more involved in their schooling. Respondents also had children later, were more likely to raise children with a spouse or partner, and married more educated spouses.

Subgroup Comparisons

If community colleges are to occupy an important place in poverty and workforce development programs, they must have positive intergenerational effects for low-income and minority students. Critics charge community colleges with reproducing preexisting income and ethnic inequality (Brint 1972, Bowles and Gintis 1976, Brint and Karabel 1989, Pincus 1986, 1989). This section asks whether the effects we have seen so far differ for groups distinguished by income and minority status. Specifically, I am interested in whether low-income and minority mothers are able to pass on educational advantages to their children. Higher proportions of low-income and minority students enter college at the community college level, making the consequences of this decision, i.e., where to enter college, an important question.

Here, I explore the effect of mother's community college attendance, relative to no postsecondary schooling, on the following children's outcomes: early PIAT, whether the child ever repeated a grade in school, whether the child ever dropped out of high school, early Home Cognitive Stimulation, and how often mother talked to her child about school matters.

The first set of regression models looks at the interaction between community college entrance and ethnicity (Table 5.6).[59] The models contain three interaction terms: mother's ethnicity is black *x* entered a community college, mother's ethnicity is Hispanic *x* entered a community college, and mother's ethnicity is other *x* entered a community college. I will discuss the interactions for black and Hispanic mothers only, due to the small number of cases in the "other ethnicity" category. For these purposes, I interpret only the significance and direction of the interaction coefficients. For example, if the interaction term is significant and positive, that means that that group receives *more* benefit relative to the reference category, and conversely, if the interaction term is significant and negative, that group receives *less*. If the term is non-significant, there is no interaction effect, meaning that each group receives similar benefits from their community college education.

[59] Because I am interested in subgroups of the larger sample, distinguished by ethnicity and income quartile, I selected early outcomes and regression coefficients in order to preserve cases. Furthermore, regression models allow the use of interaction terms.

Table 5.6
Effect of Community College Entry compared to High School Graduates on Second Generation Outcomes – Ethnic Comparisons

	Early PIAT (OLS coefficients)	Child ever repeated a grade (Logistic coef.)	Child ever dropped out of high school (Logistic coef.)	Early Home Cognitive Stimulation (OLS coefficients)	Talks to mother about school matters (OLS coefficients)
Entered a community college	-.014	-.301***	-.912***	.031	.105***
Black	-.084***	.224***	.083	-.404***	.100***
Hispanic	-.135***	-.080	.275**	-.219***	.041
Other	-.161***	-.013	.422**	-.117***	.041
Male	-.173***	.503***	.175**	-.098***	-.089***
Age of mother	-.021***	-.122***	-.192***	-.020***	-.025***
Mother's parents' SEI	.041***	-.040	-.068	.065***	.025**
Income of family of origin	.034***	-.264***	.061	.058***	.012
Mother's parents' education	.034***	.037	-.062	.101***	.007
High school grades	.058***	-.290***	-.448***	.024**	.018
AFQT80	.008***	-.011***	.008***	.004***	-.000
Mom's self esteem	-.024	-.145**	-.052	.225***	.061***
Mom's mastery	.147***	-.202***	.017	.253***	.052***
Community college x Black	.121***	.169	.723***	.119***	-.097**
Community college x Hispanic	.290***	.426**	.705**	.044	-.072
Community college x Other	.192**	-.854**	.385	.283***	-.256***
Constant	-.168*	3.169***	2.821***	-.947***	1.890***
R-square	.1084	.1315	.0721	.2052	.0365

*p<.05 **p<.01 ***p<.001

The earlier model without interactions (Table 5.4) showed mother's community college attendance to improve children's early PIAT score relative to no college. Each ethnicity interaction term shows a significant and positive coefficient, meaning that children of black (.121) and Hispanic (.290) ethnicities benefit *more* in terms of math and reading skills from attending a community college than white children, the omitted category (Table 5.6).

However, there appears to be some reproduction of ethnic inequality in terms of schooling behaviors. The main model from the Table 5.4 showed that children were slightly less likely to repeat a grade or drop out of high school if their mother attended a community college. While the interaction for black women is non-significant for repeated a grade, it is positive and significant for dropping out of high school (.723), meaning that mother's community college attendance has less of a positive effect on black children's likelihood of dropping out of high school. The same is true for Hispanic women on both schooling behavior outcomes; Hispanic children benefit *less* in terms of persistence in school, as measured by repeated a grade (.426) and dropped out of high school (.705).

Finally, I look at two measures of home environment: Early Cognitive Stimulation and how often parents and children talk about school matters. Table 5.4 showed community college attendance to improve cognitive stimulation in the home and amount of interaction between child and mother regarding to school matters. Interaction terms show that children of black mothers benefit *more* relative to white children in terms of cognitive stimulation (.118). The non-significant coefficient for Hispanic children means they benefit similarly (.044). In terms of talking about school matters, black

children benefit less than white women (-.097) and Hispanic children benefit similarly (-.072, non-significant).

Overall, the results are mixed. Relative to white children, black children benefit *more* in terms of cognitive ability, measured by the PIAT, and cognitive stimulation in the home. They also benefit similarly in terms of child repeating a grade. However, community college attendance has less of an effect on black children's likelihood of dropping out of high school and the amount of time mother talks to child about school matters. Hispanic children benefit more from their mother's community college attendance in terms of the PIAT. They benefit similarly in terms of home environments, measured by Cognitive Stimulation and amount of time mother talks to child about school matters. However, they benefit less in terms of schooling behaviors (repeated a grade and dropped out of high school).

It is interesting that in previous analyses on the entire sample, larger effects went to schooling behaviors than to cognitive measures. However, when I disaggregate the sample by ethnicity, the opposite is true for minority children; they benefit more in terms of cognitive measures than white children do, but less in terms of schooling behaviors. This suggests the importance of external factors such as schools, peer groups, and opportunity structures (Ogbu 2003).

The next set of analyses looks at interactions between community college attendance and socioeconomic status. The interaction is mother's community college attendance *x* a composite of her socioeconomic status background (SES), measured by her parents' income, education, and occupational prestige scores (Table 5.7). Critics charge community colleges with reproducing preexisting class inequality. I extend this

argument to the next generation, the children. The interaction terms will tell us whether low SES mothers are able to improve their children's schooling outcomes relative to higher SES mothers. Because of the age of the children, I am using these outcomes as a sign of future upward mobility.

Table 5.7
Effect of Community College Entry compared to High School Graduates on Second Generation Outcomes – Socioeconomic Comparisons

	Early PIAT (OLS coefficients)	Child ever repeated a grade (Logistic coef.)	Child ever dropped out of high school (Logistic coef.)	Early Home Cognitive Stimulation (OLS coefficients)	Talks to child about school matters (OLS coefficients)
Entered a community college	.089***	-.162**	-.463***	.111***	.046**
Mother's SES[a]	.139***	-.259***	-.012	.260***	.027*
Black	-.052**	.331***	.137	-.361***	.066***
Hispanic	-.061**	.000	.337***	-.204***	.017
Other	-.105***	-.127	.454***	-.031	-.050
Male	-.173***	.506***	.164**	-.098***	-.089***
Age of mother	-.021***	-.122***	-.192***	-.020***	-.025***
High school grades	.058***	-.299***	-.445***	.022**	.017
AFQT80	.008***	-.011***	.008***	.004***	-.000
Mom's self esteem	-.023	-.138**	-.067	.223***	.063***
Mom's mastery	.145***	-.198***	.042	.251***	.051***
Comm. college x SES	-.090***	.085	-.504***	-.121***	.048**
Constant	-.1844*	3.103***	2.770***	-.9494***	1.912***
R-square	.1074	.1277	.0718	.2054	.0346

[a] Composite measure of mother's parents' income, education, and occupational prestige when she last lived at home (z-scores).

*p<.05 **p<.01 ***p<.001

Looking at the same set of outcomes, the interaction terms in Table 5.7 tell us whether community college effects differ by socioeconomic background. A negative and significant coefficient for Early PIAT (-.090) means that the higher socioeconomic background the mother is from, the *less* her children benefits from her community college education compared to similar high school graduates. In other words, children of lower socioeconomic mothers benefit *more* from her community college education.

There is no interaction effect on likelihood of repeating a grade. However, there is a large effect on likelihood of dropping out of high school; as socioeconomic status goes up, the benefit on high school dropout goes down (-.504). Although factors such as peer groups, contact with the juvenile justice system, and early course failure are important predictors of high school dropout (Swanson 2004, Roderick and Camburn 1999, Balfanz et al. 2003), it appears that especially for low-income women, attending community colleges pays off in child's persistence in school. Lower socioeconomic children also benefit more from their mother's community college attendance in terms of home cognitive stimulation (-.121), although it appears more advantages in terms of talking to children about school matters goes to children from higher socioeconomic backgrounds.

In terms of cognitive skills and cognitive stimulation, community colleges confer even greater advantages to mothers from lower socioeconomic backgrounds relative to mothers from higher socioeconomic backgrounds. The findings are largely consistent with the ethnicity interactions. There is only one case of greater advantages going to higher socioeconomic families, and this was amount of time mothers and child spends talking about school matters. This variable is an important sign of parental involvement and encouragement, however, as mentioned earlier, this variable only measures amount

of interaction and not kind. Parents whose children are having academic problems may also talk to their children more often. Overall, however, there is more evidence of *greater* benefits going to disadvantaged children, failing to support the social reproduction argument as it pertains to mobility in the succeeding generation.

The Associate of Arts Degree

The preceding analyses looked only at *level* of college entry, community colleges or four-year colleges. However, community college entrants have a variety of educational paths open to them once they enroll in college. As we saw in Chapter 3, most drop out without completing a degree. However, many drop out due to a decent job offer, or they were enrolling simply to upgrade skills. Therefore, dropout is not necessarily a sign of failure. In fact, we saw economic benefits among dropouts. Community college entrants can also transfer and some will go on to complete a bachelor's degree. If they are able to do so, we saw that their earnings are comparable to bachelor's degree holders who started at four-year colleges.

This section examines whether the associate's degree, relative to no postsecondary schooling and relative to the bachelor's degree, confers advantages for the second generation.[60] More disadvantaged students may not have the time or money to commit to more than two years of college. The community college is an institution designed to confer the Associate of Arts (AA) degree. If community colleges are to occupy an important place in policies addressing persistent poverty, then it is worthwhile to know the payoffs to this degree. If former welfare recipients are encouraged to attend

[60] Because of the smaller number of AA degree holders among NLSY respondents, I present coefficients from the regression models in order to preserve cases. In almost all cases, the coefficient from the matched sample was equivalent.

community colleges, should these policies encourage the completion of AA degree completion?

Furthermore, although we would expect the bachelor's degree to confer greater benefits to children, due to their greater years in school or their more academically oriented curriculum, so far, this has not been tested empirically. The earnings premium to the bachelor's degree is well known. However, this section asks how the advantages typically attributed to bachelor's degrees compare to advantages from the associate's degree, net of mother's background characteristics.

The first set of analyses in this section compares the intergenerational returns to the associate's degree relative to the bachelor's degree (Table 5.8, column 1). As expected, children whose mothers completed a bachelor's degree do better on cognitive tests, are more likely to enroll continuously in school, and are more likely to enroll in the college preparatory track. The changes in PPVT and PIAT are significant even with controls for mother's ethnicity, socioeconomic status, and other factors, although the gaps represent small changes in standard deviation (-.1055 and -.0980, respectively). Children of mothers with bachelor's degrees are also less likely to exhibit behavioral problems and drop out of school. Although the number of cases is small, the gap in college prep track is quite large.[61] The benefit of having a mother with a bachelor's degree on children's college attendance is remarkable; compared to mothers with associate's degrees, children whose mothers completed the bachelor's degree are 17.5% more likely to be in college preparatory track. The reason the figure for college entry is not included is that *all* children in the sample whose mothers got a bachelor's degree went to college themselves.

[61] College entry could not be computed because BA predicted children's college entry perfectly; in other words, all children of mothers with bachelor's degrees enrolled in college.

Table 5.8
Effect of the Associate's Degree on Second Generation and Home Environment Outcomes
Estimated Gaps from Regression Models – NLSY79 Adult and Children Files

	Associate's Degree relative to the Bachelor's Degree	Associate's Degree relative to the High School Diploma
Cognitive Ability		
Early PPVT (std units)	-.1055***	-.0051 n.s.
N of cases	737	2,163
Early PIAT (std units)	-.0980***	+.0978***
N of cases	1,038	3,030
School Behaviors		
Early Behavioral Problems Index (std units)	+.2284***	-.0296 n.s.
N of cases	1,101	3,451
Parents ever required to come to school (%)	+4.43***	+2.98***
N of cases	1,140	3,440
Child repeated a grade (%)	-0.29 n.s.	-4.2***
N of cases	1,141	3,474
Ever dropped out of high school (%)	+4.18***	-0.4 n.s.
N of cases	378	1,662
College preparatory track (%)	-17.53***	-1.64 n.s.
N of cases	317	1,372
Entered college (%)	–	+17.6***
N of cases		639
Home Environments		
Early Home Cognitive Stimulation (std units)	-.1342***	+.1196***
N of cases	1,526	4,174
Early Home Emotional Scale (std units)	-.0405 n.s.	+.0856***
N of cases	1,510	4,159
Talks to child about school matters	+.0007 n.s.	+10.5***
N of cases	670	1,313
Knows child's friends and parents (%)	-7.52***	+2.57 n.s.
N of cases	1,194	3,634
Age of mom at birth of child (years)	-.9680***	+1.58***
N of cases	1,469	2,847
Ever a single mom to child (%)	+6.14***	-10.5***
N of cases	2,024	3,501
Highest grade completed by spouse or partner	-.9868***	+.95***
N of cases	1,474	2,113

*p<.05 **p<.01 ***p<.001

Children of mothers with bachelor's degree benefit more, relative to the associate's degree, in terms of household resources. There is more cognitive stimulation and mother is more likely to know the child's friends. Male and female respondents with BA degrees also delay childbirth, are less likely to raise a child as a single parent, and marry more educated spouses, although the gaps are not large.

It should be noted, however, that greater portions of the unadjusted gaps (not presented here) were explained by mother's background. For example, mother's background characteristics explain almost 4/5 of the unadjusted gap in PPVT and almost ¾ of the gap in PIAT. The gap in college preparatory track was almost twice as large before I controlled for background factors. The same is true for household resources; in most cases, 2/3 of the gaps were explained by mother's background characteristics.

The final set of analyses compares the effect of mother's associate's degree to mothers with the high school diploma, no college (Table 5.8, column 2). The results are largely similar to the previous results for community college entrants. Earlier analyses did not control for where the community college entrants ended up, so the group of community college entrants included weaker students who dropped out *and* stronger students who were able to transfer and complete a bachelor's degree. AA degree holders should fall somewhere in the middle of this group; therefore, I expect similar results.

Overall, children whose mothers obtained associate's degrees experience positive effects on almost all second generation outcomes, relative to children whose mothers who graduated high school but did not complete any postsecondary schooling. Net of mother's background characteristics, there is a small but significant positive effect of the associate's degree on children's math and reading skills (PIAT). While the effect on

dropping out of high school and being in the college preparatory track disappears, the gap in college attendance is striking (+17.6%), although again, the number of cases is small. Children grow up in homes with greater cognitive and emotional stimulation, although the gaps represent small increases in standard deviation. The effect on talking to children about school matters is large. Completing the associate's degree positively influences the three marital/fertility outcomes. In some cases, such as PIAT score and amount of time mother spends talking to her child about school, the effect sizes are larger than in the previous analysis of community college entrants and high school graduates, although it is not always the case that there is an additional sheepskin effect.

As expected, net of mother's background characteristics, the bachelor's degree improves second-generation outcomes more than the associate's degree. However, for mothers unable or willing to obtain a bachelor's degree, the associate's degree exerts positive influences that carry over in the next generation. In terms of policies for mobility, the associate of arts is a short, low-cost, and flexible program. Rather than quick employability, the associate's degree improves children's test scores, college attendance, and home environments.

Conclusion

Critics fault community colleges for providing inferior educations by offering curricula designed to prepare students for low-paying jobs. It seems unlikely that this kind of curriculum could have the same kind of positive effects on children's educational trajectories as we have seen from longer-term and more liberal arts centered curricula found at four-year colleges (Attewell and Lavin forthcoming, Haveman and Wolfe 1994,

Duncan and Brooks-Gunn 1997, Farkas 1996). Parents who attend community colleges may not get as involved in their own children's schooling or participate in activities that improve children's cognitive skills, such as reading to their children.

Looking at simple descriptive statistics, children of mothers who attended community colleges are disadvantaged on almost all of the outcomes, relative to mothers who attended four-year colleges. However, by controlling for mother's background characteristics, such as ethnicity, socioeconomic background, cognitive ability, and psychological states, in regression and matched models, I determine that most, if not all, of these disadvantages come the disadvantages mothers brought in with them. Like many of the results from previous chapters, perceived disadvantages among community college students are more influenced by students' socioeconomic backgrounds and academic preparation.

For many outcomes, community colleges are situated between high schools and four-year colleges. This is true for child's performance on math and reading tests and cognitive stimulation in the home. The same is true for respondent's marital and fertility outcomes.

In other ways, however, the effects of community colleges seem closer to that of four-year colleges than to high schools. The gaps between high school graduates and community college entrants are larger than the gaps between community college entrants and four-year college entrants. This is true for most of the school persistence outcomes: dropout, college preparatory track, and college attendance. In fact, relative to children whose mothers attended four-year colleges, children of community college mothers were as likely to stay in school and be in a college preparatory track.

I do not find *level of college entry effects* on child's behavioral problems, measured by the Behavioral Problems Index and behavioral issues that require parents to come to school, and likelihood of repeating a grade. In other words, children benefit similarly from their mother's education, whether it is at a community college or four-year college. However, I do find *degree* effects: mothers who complete the associate's degree have children less likely to exhibit behavioral problems compared to mothers with no college. Mothers with bachelor's degrees have even larger effects on these outcomes.

In conclusion, mother and child's *behaviors* are more influenced by community colleges than measures of cognitive *skills* are. Community colleges seem to go a long way in influencing the social environments of their students, defined by Farkas (1996) and Lamont and Lareau (1988) as the skills, habits, and styles that together form a kind of social capital.

Overall, these findings provide weak support for the argument that community colleges provide not only fewer years of education, but also inferior years of education. Rather than reproduce inequality in the second generation, students of all ethnicities and socioeconomic backgrounds saw improvements in most of the outcomes. While these analyses cannot tell us whether encouraging former welfare recipients to enroll in community colleges is a better policy than some other program, such as short-term training or certificate programs, these findings suggest that community colleges can play an important role in strategies not only for improving individual economic gain, but also for improving long-term intergenerational gains.

Chapter Six
Conclusion

The influence of college is undeniable and stretches across such diverse realms as mental and physical health, attitudes and values, and economic well being. While the benefits of four-year college attendance have been documented in numerous empirical studies, the benefits of attending college in the less prestigious community college sector have been a subject of intense debate since the 1960s. Whether community colleges reproduce preexisting social inequalities or promote upward mobility is a question that has major consequences for a large number of today's college students, many of whom come from disadvantaged backgrounds.

Drawing from the conflict perspective, critics have charged community colleges with diverting students from four-year colleges into terminal vocational two-year programs, thereby lowering their rates of educational attainment and preparing them for low-paying, low prestige occupations (Karabel 1972, Brint and Karabel 1989, Bowles and Gintis 1976, Pincus 1980, 1986, Zwerling 1986). Supporters, on the other hand, credit community colleges with expanding access to higher education. Consequently, students are eligible for better jobs than if they had not gone to college (Fields 1962, Medsker and Trent 1964, Cross 1968, Palmer 1998, Rouse 1998, Cohen 1990, Grubb 1999a, Pascarella 1999, Cohen and Brawer 2003).

Each side of the debate can find supporting empirical evidence. However, the debate over community college effects has not been settled. Although these two perspectives are posed as competing explanations for community college effects, they

employ different comparison groups: Critics compare community college students to four-year college students, while supporters compare them to high school graduates.

By providing both comparisons in this dissertation, I have tested whether community colleges are closer to high schools or four-year colleges, or whether they are simply intermediate between high schools and four-year colleges. By employing a long-term longitudinal dataset, one that contains educational and occupational information from respondents in their late thirties and early forties, I have more reliable data on occupational attainments than was used in previous studies. By including two techniques that control for background factors – traditional regression and a counterfactual model using propensity matching – I have more clearly distinguished between community college effects and student effects.

Finally, in order to more fully assess the economic benefits of community colleges, I have examined a wide range of economic outcomes that have not been studied in relation to community colleges but that influence economic well being and attainments in the second generation. These include household incomes, rates of home ownership, and value of financial assets. These outcomes are very important when considering economic well being and inequality (Spilerman 2000, Conley 1999, Oliver and Shapiro 1995).

The most novel contribution of this research is the intergenerational approach. I have extended the notion of "social reproduction" to include outcomes in the second generation, the children of community college attendees. These outcomes allowed me to determine whether the "payoff" to community colleges is a long-term payoff, one that can influence social mobility not just in the first generation but the second generation as

well. Numerous studies have documented the intergenerational effects of parents' college education (Blau and Duncan 1967, Duncan, Featherman, Duncan 1972, Sewell and Hauser 1975, Featherman and Hauser 1978, Becker 1981, Becker and Tomes 1986, Corcoran et al. 1992, Haveman and Wolfe 1994, Duncan and Brooks-Gunn 1997, Hertz 2005, Attewell and Lavin forthcoming). I have asked whether this effect applies to parents' community college education as well.

Conclusions

(1) The analyses presented in this dissertation point to clear economic benefits from community college attendance. Compared to respondents with high school diplomas as their highest degrees, students who attend community colleges benefit not only in terms of *personal* earnings and job prestige, but also in terms of *household* economic resources. This is consistent with the findings of community college supporters and points to even more extensive economic benefits than previously known.

(2) Perhaps more important, however, are the comparable economic benefits when community college students are compared to similar four-year college entrants. There were no significant differences in any of the economic outcomes in the matched samples, and only small gaps in earnings and other financial wealth in the regression models.[62] Despite low transfer and graduation rates, high returns to community college programs

[62] Regressions controlling for degree attainment showed that the community college effect happens *through* lower rates of degree attainment. Even in regression models, ff community college entrants complete a bachelor's degree, they experience no disadvantages in earnings, job prestige, or any of the household economic resources.

such as business and health and social services mean that even students who do not transfer can get relatively high paying jobs.

Furthermore, the similarities in earnings, occupational prestige, and wealth among community college and four-year college students, even after 20 years, challenges arguments made by Pincus (1979) and others that community colleges prepare students for dead-end jobs with few opportunities for career advancement. These findings fail to support the social reproduction perspective as it pertains to economic status.

(3) The reduction of gaps from unadjusted models to regression models and matched models, most to statistical non-significance, reveals that the supposedly negative effect of enrolling in a community college observed by researchers is not really a community college effect at all, but rather the combined effect of student characteristics such as socioeconomic background, ethnicity, and age.

(4) Community colleges compare favorably to four-year colleges in terms of children's schooling behaviors. There are, however, small gaps in cognitive test scores and home cognitive stimulation. Given the critical interpretation of community colleges, it seems unlikely that they could have the same kind of positive effects on children's educational trajectories that we have seen from longer-term and more liberal arts centered curricula found at four-year colleges.

Nonetheless, there were clear positive benefits on all outcomes when community college entrants are compared to high school graduates. According to Duncan et al. (2005), parents pass on educational advantages not through specific parenting behaviors,

but more generally through improved social environments. I have shown that community colleges positively influenced households through improved economic resources, increased marital stability, and greater cognitive and emotional stimulation.

(5) Analyses on subpopulations and interaction terms suggest that community colleges pay off economically for even the most disadvantaged. According to the critical interpretation, community colleges should have worse effects on students from disadvantaged backgrounds because they are disproportionately encouraged to enroll in less lucrative terminal programs (Dougherty 1994, 2002, Pincus 1980, 1986, Brint and Karabel 1989).

Contrary to the social reproduction perspective, analyses on subgroups showed that, if anything, community colleges paid off *more positively* for students from lower socioeconomic backgrounds. Therefore, community colleges narrow the gaps in social origins rather than exacerbating them. These findings have consequences for poverty policies, which I will turn to later in this chapter.

However, there was some validity to the critical view regarding minority males, particularly Hispanic males. Compared to similar Hispanic men with no postsecondary schooling, Hispanic men failed to benefit from community colleges on some outcomes and had the largest gaps when compared to similar four-year entrants. White women did not benefit in terms of personal earnings relative to non-college educated white women. The reason for these results differed. For minority men, particularly Hispanic males, high rates of dropout and low rates of transfer accounted for the low returns to community college attendance. For women, this was more likely due to their concentration in less

lucrative fields, although fields such as nursing and social services can lead to high paying jobs.

Overall, I found evidence of *similar* or *greater* benefits going to children from low socioeconomic backgrounds, failing to support the social reproduction argument as it pertains to mobility in the succeeding generation. When I disaggregated the sample by ethnicity, I found minority children benefited more than white children in terms of cognitive outcomes, but less in terms of schooling behaviors, suggesting the possible importance of external factors such as schools, peer groups, and opportunity structures (Ogbu 2003).

(6) My findings show the existence of strong *degree* effects but not strong *level of college entry* effects. Relative to the associate's degree, the bachelor's degree led to higher earnings, higher prestige jobs, greater values of household economic resources, and had even greater positive effects on children's cognitive and schooling outcomes. Compared to the high school diploma, the associate's degree pays off more on all of these outcomes. However, there are smaller *level of college entry* effects, that is, the effect of *entering* at the community college or four-year college level.

(7) The above results lead me to deduce that community college effects are closer to four-year college effects than they are to high school effects. This is true for earnings and occupational prestige, household economic resources, *and* second generation outcomes. The evidence suggests that community colleges are not offering vastly inferior educations

compared to four-year colleges. This refutes the "community colleges as extensions of high school" or "community college as intermediate" theories.

By adequately controlling for the characteristics of students and by selecting a wide range of outcomes, I have shown that community colleges can play a greater role in improving life chances than is commonly believed. Community colleges lead to a wide range of benefits, from economic resources to marital stability to improved children's educational outcomes.

More work still needs to be done, however, to improve educational attainments for community college entrants, particularly if minority males are to benefit economically. Students who enter community colleges are older and come from lower socioeconomic backgrounds, therefore holding fulltime jobs and supporting dependents. This means they experience more role conflict from college and work responsibilities than do traditional aged. These conflicts account for a large part of dropout (Grubb and Lazerson 2004, Dougherty 2002). This cannot be solved only at the colleges, but community colleges can respond to this by providing childcare and financial and psychological support. We should shift our attention to the specific barriers to educational attainments, such as improving academic preparation in high school and strengthening articulation between community colleges and four-year colleges (see Dougherty 2002).

As a caveat, this research is not meant to discourage students of "uncertain motivation or ability" from attending four-year colleges. Rather, it shows that students

who enroll in community colleges are not doomed to lower occupational attainments. The decision to attend community college is one that will benefit students economically as well as benefit their children.

Implications of Findings

These results can perhaps help to improve the reputation of community colleges. A section of *The Chronicle of Higher Education* (October 29, 2004) devoted to community colleges notes that their reputation continues to suffer in the public's eye. As Evelyn (2004) points out, community colleges receive both high praise and scathing criticism. On one hand, they are ridiculed in the media and scorned by parents and students. On the other hand, others view community colleges as the solution to the country's employment and global competition concerns.

Improving the reputation of community colleges can improve their ability to garner support from local and federal funds. Community colleges are poorly funded compared to four-year colleges. Jenkins (2002) attributes this to their negative stereotype as "junior" colleges or remedial institutions. Despite facing increased student demand, community colleges are facing declining funding from federal, state, and local governments (Boswell and Wilson 2004, El-Khawas 1995, Phelan 2000). Describe as a "revenue squeeze," there is a growing demand for costly programs such as nursing, while at the same time community colleges are losing funding (Gershwin 2005).

Furthermore, funding is being increasingly attached to performance measures, such as transfer and graduation rates (Zeiss 1998, MacDougall and Friedlander 1990,

Sanchez and Laanan 1998). These rates are notoriously low. It is hard to assess community college performance when students attend for so many different reasons.

A funding squeeze tends to mean costs are passed on to students through tuition hikes. Tuition should remain low at community colleges if community colleges are to continue to offer opportunities to students from disadvantaged backgrounds. Because of high rates of low-income students, enrollment at community colleges is especially sensitive to tuition costs (Kane and Rouse 1999). Financial aid is often insufficient to support families and the rules for applying for aid can be confusing. Furthermore, community colleges should continue to offer programs in lucrative but costly areas such as nursing.

Policy Implications

Given the long-term payoffs described in this dissertation, community colleges could be an important tool in breaking the cycle of poverty and therefore could occupy an important place in poverty programs. Not only does the decision to enter a community college pay off in terms of personal earnings, occupational prestige, and household economic resources, but I have also shown that community colleges can sufficiently improve the life chances of children of attendees. This is especially true for minority and low-income children. Not only can community colleges prepare students for specific occupations, but they may also be more successful than narrow skills programs in promoting *long-term* self-sufficiency. Earnings remain high relative to students with four-year college educations, and children's educational outcomes are improved, suggesting future upward mobility.

Since 1996, poverty policy has been dominated by "work first" approaches that emphasize immediate employment and provide the poor with quick skills training. Passed during the Clinton Administration, The Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996 created Temporary Assistance for Needy Families (TANF). This legislation imposed greater work requirements and implemented a five-year time limit on benefits. This meant that recipients had to work *more*, while simultaneously having to build up enough skills to ensure they would not need any assistance after the five-year time limit expired.

These reforms made it very hard for welfare recipients to get any formal education while receiving benefits (Blank and Haskins 2001). Work was stressed over lifelong learning and education (Sheared et al. 2000). These programs were geared towards promoting greater economic self-sufficiency and ensuring that people remained independent of welfare; however, they employed a narrow conception of economic life histories and were decidedly shortsighted. Former welfare recipients went to work, but their families remained poor due to low-wage, part-time, and temporary work. The "work first" approach does not guarantee beneficiaries or their children will be lifted out of poverty (Jenkins and Fitzgerald 1998, Allen 1998, Grubb and Lazerson 2004).

Since 2004, states have had more flexibility in how they get people into work after welfare (Imel 2000). Although they still emphasize work first approaches, they differ widely in their education and employment requirements. Some employ quick solutions such as job training, while others have adopted more innovative strategies such as "combined programs" combining job training and search assistance with some education and broader training (GAO 1999). Supporters of combined programs argue that

these programs expose former welfare recipients to more than just narrow job skills (Grubb et al. 1999, Hayes 1999). They stress the importance of exposure to "thinking courses" that teach critical thinking and problem-solving skills, courses that are not found in shorter training programs.[63]

There has been a movement toward using community colleges to provide training for former welfare recipients (Jenkins and Boswell 2002). Some states make it hard for welfare mothers to enroll in two-year associate's programs, while others allow 10 hours of education a week as long at the recipient works at least 20 hours (Cherry forthcoming). Currently, 48% of community colleges offer welfare-to-work programs. Of those that do not, 54% plan to offer programs specifically designed for welfare recipients (AACC Fact Sheet). Examples of community college programs for former welfare recipients include COPE in New York City, high-skills training at Oakland Community College in Michigan, and customer service training in Kansas City (Pagenette and Korzell; Ream et al. 2001, Cherry forthcoming, Lisman 2001).

The findings in this dissertation support this movement, showing a far-reaching and long-term payoff to community college education. Community colleges can be a low-cost, long-term solution to poverty and employability. Community colleges have low admissions requirements and can serve adults with weak academic preparation or limited English skills. The public sector is a less expensive alternative to vocational training in two-year proprietary schools (Cherry forthcoming). Community colleges are flexible and can respond to immediate labor needs, such as a nursing shortage, and assist previously

[63] Interestingly, this is the same criticism advanced against vocational curricula in community colleges by social reproduction theorists. However, here, Grubb and Lazerson (2004) are comparing vocational programs in community colleges with vocational training centers. Like critics, they caution against community colleges becoming too vocational, or that they call "HyperVoc."

underserved rural communities (Gershwin 2005). These benefits can apply to not only former welfare recipients, but also anyone with a spotty employment history, academic difficulties, or family and work responsibilities.

Community colleges may be preferable to job placement programs or basic skills training in that students leave with stronger and more varied skills (Grubb et al. 1999, Murphy and Johnson 1999). Furthermore, community colleges expose students to the world of college, raising their aspirations for themselves and their children. This contact with college will also improve their ability to help their own children with the college application process. Deadlines and forms can be confusing, particularly for students from disadvantaged backgrounds (Orfield 1992). While teachers, counselors, and peers provide information and support, parents play an important part in supporting their child's educational attainments. Community colleges can help to narrow gaps in the amount of help and attention children of different class backgrounds receive from their parents. Finally, unlike skills training, community colleges can prepare students for further education. Although transfer rates are low at community colleges, they are higher than after attending a two-year proprietary school or skills training program. In fact, many community college vocational programs articulate with similar programs in four-year colleges, such as programs in computer science, nursing, and business.

Future research

The findings in this dissertation support the use of community colleges as solutions to poverty and workforce development. However, these analyses cannot determine whether community colleges are more effective than other employment

programs. I compare community college students to respondents in the labor force with high school diplomas but no postsecondary schooling. While community college students benefit on every outcome measured in this study, it is not clear from the data whether the reference group, high school graduates, received any other form of post-high school employment training.[64]

In the future, I would like to compare community colleges to other specific workforce development and welfare-to-work programs. The Manpower Development Research Group (MDRC) found that work-first policies led to higher earnings than education-focused programs (human-capital development) (Hamilton 2002). However, this was a short-term analysis (five years). Nor is it clear whether work-first policies have positive intergenerational effects. One study finds a positive effect of welfare-to-work on children's adjustment (Morris et al. 2001). More research is needed on the long-term consequences of welfare and employment programs.

My analyses examine respondents in the bottom income quartile of family incomes, which represents families at or near the poverty level; however, I would like to extend these analyses to respondents who have recently received welfare benefits.

This research uses simple models to test the effect of community college on children's outcomes and parenting practices. In each case, the treatment, community college attendance or associate's degree, is compared to the outcome with controls for respondent background characteristics. Future research is needed to explore the pathways and relative importance of these mechanisms. In addition, I did not control for any post-college entry variables, so I cannot determine how factors such as number of siblings or work experience might influence the effect of community colleges.

[64] Certificate holders were quite small in number (0.5%) and removed from the analyses.

Finally, the second-generation section of this research comes from an interest in parental support for children's schooling. Parents differ in the amount of help and support they can give to their children. First-generation college students are at a disadvantage. Although their parents may have high educational aspirations for them, they have less specific knowledge about applying to and succeeding in college relative to children with college-educated parents. The NELS has data on parental involvement with child's schooling, such as how often parents and children talk about the process of applying to college, a particular college, the SAT/ACT tests, and financial aid. While the NELS cannot determine whether the child's parent enrolled in a community college or a four-year college, I can test these factors in relation to the associate's degree. Here, I could compare the involvement of parents with associate's degrees to parents with bachelor's degrees and parents with no postsecondary schooling.

Community colleges are an important part of our higher education system. Millions of students converge on community colleges each year hoping to improve their life chances. Many of these students are first-generation college students and students from lower socioeconomic backgrounds. This dissertation, supplemented by these future analyses, can help to clarify the role of community colleges in improving economic prospects, not only for students but for their children as well.

Appendix A
Unweighted Descriptives (NLSY79 Adult and Child Files)

	N of cases	Range	Standard Deviation	Mean
Treatment:				
College Entrants	4,972	0-1	.4994	.4759
Community College Entrant	2,366			
Four-year College Entrant	2,606			
Independent Variables:				
Race				
White	8,984	0-1	.4968	.4430
Black	8,984	0-1	.4604	.3049
Hispanic	8,984	0-1	.3961	.1948
Other	8,984	0-1	.2325	.0573
Gender				
Male	8,984	0-1	.5000	.4954
Female	8,984	0-1	.5000	.5046
Age at College Entry	4,765	14-42	4.064	20.30
Mother's Highest Degree	8,401	0-20	3.263	10.79
Father's Highest Degree	7,632	0-20	3.984	10.90
Family Income	5,946	0-75,001	12,847	17,549
Mother's Occupational Prestige	4,492	3-92	21.75	32.66
Father's Occupational Prestige	6,057	3-96	23.57	35.60
Born in the U.S.	8,983	0-1	.2574	.9286
One/Both Parents is Foreign Born	7,802	0-1	.4257	.2378
High School Average	6,975	0-4	.9011	2.11
Academic Courses in High School	6,975	1-42	5.508	14.99
AFQT80	8,560	1-99	28.47	38.56
College Preparatory Curriculum	8,620	0-1	.4554	.2935
Educational Aspirations	8,983	1-18	2.285	14.31
Urban Residence	8,894	0-1	.4444	.7291
Child before College	4,760	0-1	.3740	.1681
Outcomes:				
Fulltime Earnings	5,949	5,000-200,000	34,227	38,987
Fulltime Occupational Prestige	5,984	4-96	23.34	43.36
Household Income	8,471	5,000-200,000	50,596	41,173
Home Ownership	8,982	0-1	.59	.49
Value of Home	5,786	0-834,954	142,207	130,619
Value of Assets	7,056	0-500,000	63,090	113,885

Appendix A (Continued)
Unweighted Descriptives (NLSY79 Adult and Child Files)

	N of cases	Range	Standard Deviation	Mean
Outcomes:				
PPVT (standardized)	3,877	-1 to 1	1.005	.0260
Early PIAT	6,638	.67-99	47.3936	23.4433
Behavioral Problems Index	6,577	30-1,000	599.0398	256.2007
Parents Called to School to Deal				
with Behavioral Problems	6,608	0-1	.3698	.1634
Child Repeated a Grade	6,653	0-1	.4331	.2501
Child Dropped out of High School	3,104	0-1	.4241	.2352
College Preparatory Track	2,572	0-1	.4758	.3464
Entered College	1,176	0-1	.5000	.5000
Early Home Cognitive Stimulation	5,042	0-96	26.93	47.34
Early Home Emotional Stimulation	4,872	0-97	26.67	47.61
Knows Child's Friends and Parents	1,400	0-1	.4767	.4995
Talks to Child about School Matters	2,564	0-3	.5678	1.605
Age at First Child	7,065	14-43	24.1	5.4
Ever a Single Parent to Children	8,984	0-1	.40	.49
Spouse or Partner's Highest Grade	5,582	0-20	13.4	2.64

Appendix B
Summary of Procedure to Match Students Based on their Propensities to Attend a Community College

To model the effect of community college attendance, I match respondents who entered community colleges with respondents who were equally likely to attend a community college, but did not. I determine this "propensity" to attend a community college through a logistic regression predicting the odds of attending a community college. All available predictors are included in this regression. I include the following independent variables, plus many interaction and quadratic terms: ethnicity, gender, age, mother's education, father's education, family income, mother's SEI, father's SEI, U.S. born, U.S. born parents, average in high school academic courses, units of high school academic courses, 1980 Armed Forces Qualification Test, score on Self Esteem scale, score on Locus of Control scale, college preparatory curriculum, degree aspirations, age entered college, had a child before entering college, and lives in an urban area. [65] Similar variables were used for the NELS logistic regressions: ethnicity, gender, socioeconomic status composite, parent's education, family income, 12th grade NELS test (reading and math combined), grade point average in 12th grade, scores on Locus of Control and Self-concept scales, college preparatory curriculum, and unless filtered, degree plans. Again, a large number of interactions and quadratic terms were included as well.

A user-created program in STATA uses this logistic regression to calculate a propensity to attend a two-year college. STATA provides a "nearest-available pair match" by finding a match for a member of the treatment group (attended a two-year college) with someone with a close propensity from the control group (did not attend a

[65] Because I am not analyzing individual coefficients, I am not worried about multicollearity.

two-year college) within a predetermined threshold (set at .01). When the number of cases allows it, I require STATA to match respondents of the same gender and ethnicity. This also allows me to analyze effects separately for members of each ethnic-gender group. For analysis of differential effects based on cognitive skill or socioeconomic status, I run a separate matched procedure that required respondents to match on AFQT or income quartile.

Students who entered community colleges make up the "treatment" group. In most cases, the reference or "control" group is four-year college entrants or respondents with no education past high school. Some chapters include additional comparisons, such as community college compared four-year college dropouts and AA degree holders compared to high school graduates. For this reason, this dissertation requires several independent matching procedures.

Below, I outline the results for each. To ensure that the treatment and control groups do not differ on important characteristics, I calculate standard biases for selected analyses. The standard bias is the difference between the mean value of a given predictor for the treatment and control groups, divided by the standard deviation of the predictor. These standard biases for the major NLSY analyses are summarized in the following table. It shows that the variables are more balanced in the matched samples than in the unmatched. Furthermore, it demonstrates that the matched treatment and control groups are, on average, very similar to one another on each of the variables included in the analysis.

A) Fulltime earnings and occupational prestige, community college entrants compared to four-year entrants. In the NLSY79-Adult File, the logistic regression predicting propensity to attend a community college yielded a pseudo-R^2 of .153 (n= 3,561). There were 1,681 treatment cases and 1,880 control cases. When matched on gender and ethnicity, STATA found 1,087 matches. The matched sample contains 2,174 respondents. The NELS regression predicting community college entrance for fulltime workers yielded a pseudo-R^2 of .282 (n=4,957). There were 2,012 treatment cases and 2,945 control cases. When matched on gender and ethnicity, STATA found 1,047 matches, yielding 2,094 respondents.

Covariate Balance of Matched and Unmatched Samples
(Standard biases, measured in standard deviation units.)

	Covariates with standard biases in range			
	NLSY79		**NELS88**	
	Unmatched sample	**Matched sample**	**Unmatched sample**	**Matched sample**
Fulltime workers, College entrants				
>.50	2		6	
.25-.50	10		2	
.15-.25	1		2	
.10-.15	3		1	
.05-.10	3		1	
<.05	3	18	2	10
Standard bias of the propensity score	.9790	-.0005	-1.453	-.0003

B) Fulltime earnings and occupational prestige, community college dropouts compared to four-year college dropouts. In the NLSY79-Adult File, the logistic regression predicting propensity to drop out of a community college yielded a pseudo-R^2 of .0978 (n= 1,808). There were 862 treatment cases and 946 control cases. When force-matched on gender and ethnicity, STATA found 595 matches, yielding a sample of 1,190 respondents.

Covariate Balance of Matched and Unmatched Samples
(Standard biases, measured in standard deviation units.)

	Covariates with standard biases in range	
	NLSY79	
	Unmatched sample	**Matched sample**
Two-year entrants and high school graduates		
>.50		
.25-.50	2	
.15-.25	5	
.10-.15	3	
.05-.10	6	
<.05	3	15
Standard bias of the propensity score	-.7619	-.0008

C) Fulltime earnings and occupational prestige, BA transfers compared to BA natives. In the NLSY79-Adult File, the logistic regression predicting propensity to get a BA if started at a community college yielded a pseudo-R^2 of .174 (n= 917). There were 226 treatment cases and 691 control cases. When force-matched on gender and ethnicity, STATA found 171 matches, yielding 342 respondents for analysis.

Covariate Balance of Matched and Unmatched Samples
(Standard biases, measured in standard deviation units.)

	Covariates with standard biases in range	
	NLSY79	
	Unmatched sample	**Matched sample**
Two-year entrants and high school graduates		
>.50	1	
.25-.50	3	
.15-.25	7	
.10-.15	2	
.05-.10	5	2
<.05	1	13
Standard bias of the propensity score	-1.030	-.0006

D) Fulltime earnings and occupational prestige, community college entrants compared to high school graduates. In the NLSY79-Adult File, the logistic regression predicting community college entrance yielded a pseudo-R^2 of .253 (n=3,661). There were 1,700 treatment cases (two-year college entrants) and 1,961 control cases. When matched on ethnicity and gender, STATA found 907 matches, yielding 1,814 respondents. The NELS logistic regression predicting community college enrollment for fulltime workers, with high school graduates as the reference category, yielded a pseudo-R^2 of .125 (n=3,692). There were 2,012 treatment cases and 1,680 control cases. STATA found 1,103 matches, yielding 2,206 respondents.

Covariate Balance of Matched and Unmatched Samples
(Standard biases, measured in standard deviation units.)

	Covariates with standard biases in range			
	NLSY79		**NELS88**	
	Unmatched sample	**Matched sample**	**Unmatched sample**	**Matched sample**
Two-year entrants and high school graduates				
>.50	3			
.25-.50	6		3	
.15-.25	2		3	
.10-.15	3		2	
.05-.10	3		4	
<.05	2	15	2	10
Standard bias of the propensity score	-1.339	-.0008	-.8916	-.0010

E) Fulltime earnings and occupational prestige, some community college compared to the high school diploma. In the NLSY79-Adult File, the logistic regression predicting propensity to complete some community college yielded a pseudo-R^2 of .135 (n= 2,384). There were 862 treatment cases and 1,522 control cases. Matched on ethnicity and gender, STATA found 672 matches. The matched sample contains 1,344 respondents.

Covariate Balance of Matched and Unmatched Samples
(Standard biases, measured in standard deviation units.)

	Covariates with standard biases in range	
	NLSY79	
	Unmatched sample	**Matched sample**
Two-year entrants and high school graduates		
>.50	1	
.25-.50	1	
.15-.25	8	
.10-.15	5	
.05-.10	0	
<.05	4	15
Standard bias of the propensity score	-.9095	-.0007

F) Fulltime earnings and occupational prestige, the AA degree compared to the high school diploma. In the NLSY79-Adult File, the logistic regression predicting propensity to get a BA if started at a community college yielded a pseudo-R^2 of .291 (n= 2,023). There were 501 treatment cases and 1,522 control cases. Matched on gender and ethnicity, STATA found 326 matches. The matched sample contains 652 respondents.

Covariate Balance of Matched and Unmatched Samples
(Standard biases, measured in standard deviation units.)

	Covariates with standard biases in range	
	NLSY79	
	Unmatched sample	**Matched sample**
Two-year entrants and high school graduates		
>.50	4	
.25-.50	5	
.15-.25	3	
.10-.15	2	
.05-.10	3	2
<.05	2	13
Standard bias of the propensity score	-1.465	-.0008

G) Household economic resources and marital/fertility outcomes, community college entrants compared to four-year college entrants. In the NLSY79-Adult File, the logistic regression predicting propensity to enter a community college yielded a pseudo-R^2 of .1473 (n= 4,934). There were 2,344 treatment cases and 2,590 control cases. Matched on gender and ethnicity, STATA found 1,542 matches. The matched sample contains 3,085 respondents.

H) Household economic resources and marital/fertility outcomes, community college entrants compared to high school graduates. In the NLSY79-Adult File, the logistic regression predicting propensity to enter a community college yielded a pseudo-R^2 of .233 (n= 5,107). There were 2,344 treatment cases and 2,763 control cases. Matched on gender and ethnicity, STATA found 1,290 matches. The matched sample contains 2,580 respondents.

I) Household economic resources and marital/fertility outcomes, the AA degree compared to the high school diploma. In the NLSY79-Adult File, the logistic regression predicting propensity to get an AA degree yielded a pseudo-R^2 of .3119 (n= 3,501). There were 738 treatment cases and 2,763 control cases. Matched on gender and ethnicity, STATA found 507 matches. The matched sample contains 1,014 respondents.

J) Second-generation outcomes, mothers who entered a community college compared to mothers who entered a four-year college. In the NLSY79-Child File, the logistic regression predicting propensity to enter a community college yielded a pseudo-R^2 of .138 (n=3,062). There were 1,306 treatment cases and 1,756 control cases. Matched on mother's ethnicity, STATA found 905 matches. The matched sample contains 1,810 respondents.

K) Second-generation outcomes, mothers who entered a community college compared to mothers with no college. In the NLSY79-Child File, the logistic regression predicting propensity to enter a community college yielded a pseudo-R^2 of .183 (n=5,183). There were 1,306 treatment cases and 3,877 control cases. Matched on mother's ethnicity, STATA found 1,082 matches. The matched sample contains 2,164 respondents.

L) Second-generation outcomes, mothers with AA degrees compared to mothers with no college. In the NLSY79-Child File, the logistic regression predicting propensity to enter a get an AA degree yielded a pseudo-R^2 of .239 (n=4,735). There were 858 treatment cases and 3,877 control cases. Matched on mother's ethnicity, STATA found 693 matches. The matched sample contains 1,386 respondents.

Appendix C
Descriptives by Level of College Entry, Weighted (NLSY79-Adult File)

	High School Graduate, No college	Two-year College Entrant	Four-year College Entrant	Total
Race (%)				
White	32.3	29.3	38.4	100
Black	39.1	28.0	32.9	100.0
Hispanic	36.4	35.3	28.4	100.0
Other	31.3	33.8	34.9	100.0
Gender (%)				
Male	36.2	27.0	36.8	100.0
Female	30.7	32.6	36.7	100.0
Age at College Entry (mean)	--	20.9	19.3	20.0
Mother's Highest Grade Completed (mean)	10.8	11.8	12.8	11.8
Father's Highest Grade Completed (mean)	10.6	12.0	13.5	12.1
Income of Family of Origin in 1979 (mean)	$19,067	$21,253	$26,196	$22,249
Mother's Occupational Prestige (mean)	31.0	38.3	44.9	38.5
Father's Occupational Prestige (mean)	31.9	41.6	51.7	42.3
Born in the U.S. (%)	33.5	29.6	36.8	100.0
One parent is Foreign Born (%)	28.7	31.4	39.9	100.0
High School Average in Academic Courses (mean)	1.92	2.28	2.73	2.34
Units of Academic Courses in High School (mean)	13.7	15.7	17.7	15.8
Armed Forced Qualifying Test Score (mean)	34.0	50.8	66.0	50.9
College Preparatory Curriculum in High School (%)	11.5	27.2	61.2	100.0
Grade Aspirations (mean)	13.0	14.8	16.1	14.7
From an Urban Area (mean)	30.5	30.5	39.0	100.0
Had a Child before Graduating High School (%)	50.7	31.8	17.5	100.0

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