IN PURSUIT OF POSTSECONDARY EQUITY:
EVALUATING THE WASHINGTON STATE ACHIEVERS PROGRAM

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ABSTRACT

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Conventional wisdom suggests postsecondary education is fundamental to sustaining economic growth, maintaining a democratic polity, and insuring individual quality of life. Opportunities to pursue postsecondary education, however, are not distributed equitably. Of most notable concern, in institutions of higher learning, is the under-representation of first-generation college students, students of color, students from low-income homes, and immigrant students. This study examined the Washington State Achievers (WSA) Program, a guaranteed scholarship program serving those traditionally underrepresented in higher education.

The driving questions for this study were: How did a guaranteed funding program influence postsecondary enrollment among those populations traditionally underrepresented in higher education? And, did guaranteed grant aid influence the type of postsecondary institution in which underserved students enrolled? The former question spoke to issues of college access, while the latter spoke to college choice.

High school students from five high schools, in one urban Washington state district, were surveyed about their family and educational backgrounds, social networks, and participation in the WSA program. A follow-up survey was administered the fall after high school graduation, at which time students were asked if and where they were enrolled in postsecondary coursework. Responses to the surveys were analyzed using multinomial logistic regression models to evaluate how the WSA program influenced

postsecondary enrollment and the types of postsecondary institutions in which underserved students enrolled.

Results from the analysis suggested that the WSA program was effective at not only improving postsecondary opportunity, but in expanding the opportunity for enrollment at four-year universities. Furthermore, the WSA program was particularly effective at improving postsecondary opportunity for African American and female scholarship recipients.

Ultimately, the present study provides additional insights into the influence public policy can have on issues surrounding postsecondary equity. Specifically, the findings from this study contribute to our understanding of early intervention programs and the impact of guaranteed grant aid on postsecondary access and choice. Recommendations for future research are also presented.

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Chapter One
Introduction and Framework for the Study

While conventional wisdom suggests postsecondary education is fundamental to sustaining economic growth, maintaining a democratic polity, and insuring individual quality of life, opportunities to pursue postsecondary education are not distributed equitably. Of most notable concern is the under-representation of first-generation college students, students of color, students from low-income homes, and immigrant students in institutions of higher learning.

Studies of postsecondary opportunity are concerned, among other things, with *who* participates in postsecondary education, *how* some come to participate, and *why* others are seemingly denied access. Scholars of college choice and college access are inherently concerned with understanding the forces that shape an individual's educational choices.

This dissertation seeks to contribute to our understanding of college going behavior. In essence, the driving questions for this study are: How does a guaranteed funding program influence postsecondary enrollment among those populations traditionally underrepresented in higher education? And, does guaranteed grant aid influence the type of postsecondary institution in which underserved students enroll? The former question speaks to college access, while the latter speaks to issues of college choice.

Specifically, this dissertation will examine the impact of the Washington State Achievers (WSA) Program on college access and choice. In addition to providing funding for high school reform, the Washington State Achievers Program guarantees its scholarship recipients funding to cover the better part of tuition and fees for four years of

baccalaureate education. Since guaranteed grant programs for low-income students are increasingly implemented as policy interventions (St. John, Musoba, Simmons, Chung, Schmit, & Peng, 2004), this study will also contribute to our understanding of the impact of guaranteed funding programs on postsecondary opportunity.

From a methodological perspective, this study will contribute to our understanding of access and choice models. I will specify a multinomial logit model informed primarily by empirical extensions of the human capital and social capital theories. Given the focus on both access and choice, a multinomial logit model is an appropriate tool for understanding the complex nature of college going behavior and for examining the propensity to enroll in one type of institution as compared to another.

Traditionally, higher education literature has examined access and choice by specifying logit and probit models (Peng, So, Stage, & St. John, 2002). This traditional modeling technique limits the outcome variable to one value; for example, students either enrolled in any type of postsecondary education, or they did not. While logistic regression models provide valuable insight into issues of college access, their ability to describe college choice is limited.

Notwithstanding their traditional rarity, the use of multinomial logit models in postsecondary research has become slightly more common in recent years. For example, the Indiana Project for Academic Success, under the direction of Ed St. John, analyzed state-wide and campus-specific retention trends utilizing multinomial logit models (IPAS, 2004). In another study, Glick and White (2004) specified a multinomial logit model to analyze postsecondary opportunity among the high school class of 1992. Nguyen and

Taylor (2003) also used data from the National Education Longitudinal Study (NELS) to model postsecondary employment and schooling choices using multinomial logit.

Inequities in Postsecondary Opportunity

It is well documented that students from low-income homes, students whose parents did not attend college, and students of color are underrepresented in the academy. In fact, of those low-income students who are highly and very highly qualified for college, only 47% enroll in a four-year college, compared to 67% of similarly qualified high-income students (Advisory Committee on Student Financial Assistance, 2001). Kane (1999) found similarly that college enrollment rates varied substantially by one's family income, even among the highest achieving math students.

When considering the enrollment of high school graduates in any postsecondary institution, the contrasts in college-going are even starker. One-half (49%) of low-income high school graduates did *not* enroll in higher education the fall after graduation, compared to only 7% of high-income high school graduates (Perna & Titus, 2002).

Gaps in enrollment among the highly qualified also divide along racial and ethnic lines. Among highly and very highly qualified White high school graduates, 61% enroll in a four-year college, compared to 44% of similar Hispanic and 28% of similar Black students (Advisory Committee on Student Financial Assistance, 2001).

Some of the enrollment discrepancies result from inequitable admissions practices. As college admissions criteria changed between 1985 and 1999, the college acceptance rate declined by two percentage points for White students, eight percentage points for Native American students, nine percentage points for Asian American students,

12 percentage points for Hispanic students and 18 percentage points for African American students (Breland, 2000).

The education of one's parents is yet another predictor of college-going behavior (Heller, 2004). Among high school graduates who planned to attend a four-year institution immediately after high school, 87% of students with college educated parents were indeed enrolled in a four-year institution two years after high school graduation (Cabrera & LaNasa, 2000, 5; Terenzini, Cabrera & Bernal, 2001, 13). For those students without college educated parents, however, the percentage enrolled at a four-year institution dropped to 65% .

These discrepancies in educational opportunity are not manifest solely in higher education, but they are indicative of inequities in the entire American educational enterprise. Throughout their schooling experience, students in poor neighborhoods have access to fewer educational resources. Due to school financing practices, poor districts expend 36% less per student than their wealthy counterparts, even after controlling for cost of living (NCES, 1996).

Not only are poor students less likely to complete college preparatory coursework, but they are less likely to attend schools that even offer college preparatory classes (Advisory Committee on Student Financial Assistance, 2001). Similarly, White students are more likely than racial and ethnic minorities to complete college preparatory curriculum and students with college-educated parents are more likely than first-generation students to prepare academically for college (Camara & Schmidt, 1999; Thomas, 1998).

The inequities in postsecondary opportunity come at a time when the source of the inequity is hotly debated. Over the past decade, the National Center for Education Statistics (NCES), a division of the Department of Education, has published a number of reports that claim academic preparation explains the variance in college enrollment rates (for examples, see Choy, 2002 and Adelman, 1999). Some influential NCES studies have suggested that once academic preparation is controlled for, financial need fails to predict enrollment inequity (Berkner & Chavez, 1997; Horn & Nunez, 2000).

Recent research has concluded that the methodologies underlying the NCES reports contain statistical errors (Becker, 2004; Heller, 2004). The problems associated with NCES methodology appear to be located in the multivariate analysis, intended to analyze college going behavior (Fitzgerald, 2004; Heller, 2004). Perhaps the most substantial error incorporated into the NCES reports was the creation of a college qualification index that measured a student's degree of academic preparation. The inclusion of the 'college qualified' explanatory variable led two of the reports to conclude that family income level was irrelevant to the likelihood of college attendance among students who were college qualified (Berkner & Chavez, 1997; Horn & Nunez, 2000). Becker (2004) demonstrated that this technique exposed the multivariate models to sample selection, endogeneity, and omitted variable bias. Recommendations, therefore, that public policy should address academic preparation, while ignoring issues of financial need, were misguided.

The opposing argument in the postsecondary equity debate is that while academic preparation is clearly important, finances also matter (Advisory Committee on Student Financial Assistance, 2001; Paulsen & St. John, 2002). Advocates of this position argue

that postsecondary inequality is predominantly a function of socioeconomic class. The argument is that rising tuition costs and inadequate financial aid render college attendance unaffordable for poor and working class students; furthermore, the sheer costs associated with college going may discourage poor students from becoming college qualified (Becker, 2004). This study adopts the latter position, assuming that finances and academic experience both play a critical role in postsecondary opportunity.

In sum, ethnic minorities, first-generation students, and the low-income aren't privileged with the same academic opportunities as their wealthier and ethnic-majority counterparts. When one takes into consideration the sticker price of most colleges, the living costs associated with college attendance, and the opportunity cost of foregoing a full time job, is it any wonder those traditionally underrepresented are less likely to take college entrance exams, apply to college, and enroll in college (St. John, 2002a; Terenzini, et al., 2001)?

Unfortunately, the glaring inequities in educational opportunity come at a time when education is increasingly tied to quality of life. Because of the impact of higher education on one's future earning potential and occupational opportunities, *where* one goes to college is as worthy of our study as *if* one goes to college. Day and Newburger (2002) estimated that individuals with a four-year degree, working year round, earn $14,000 more per year than individuals with a two-year degree. While individuals with Baccalaureate degrees and students with Associate's degrees are both college educated, the status outcomes resulting from each type of postsecondary experience differ. It is not enough, therefore, to simply study who goes to college, we must also concern our study with where students enroll.

Interestingly, first-generation students, students of color, and low-income students, while generally underrepresented in postsecondary education, are over-represented on two-year college campuses (Bailey, 2002). Students from low-income homes, however, are less likely than their higher income peers to enroll in four-year institutions and at private colleges and universities (Paulsen & St. John, 2002). The critical point, therefore, is that inequities exist not only in college access, but in college choice.

A Response to Inequity – Early Intervention Programs

In an effort to improve the odds of college going, among those groups of students traditionally underrepresented in postsecondary education, governmental and philanthropic organizations have implemented an array of early intervention programs. At their heart, early intervention programs attempt to normalize the decision to pursue postsecondary education. Comprehensive programs generally target low-income, first generation, and ethnic minority students. They typically provide supplemental academic training, mentoring, and financial assistance to motivate greater numbers of the underrepresented to prepare for, enroll in, and graduate from postsecondary institutions.

Formal evaluations of these early intervention programs are limited in number, but there is some reason to believe many of the programs are successful. In a review of the federally funded TRIO programs, Adrienne Kezar (2001) found Upward Bound participants were four times more likely to earn a baccalaureate degree than non-participating students with similar backgrounds. Additionally, she found that 73% of Talent Search participants enrolled in college. Findings which suggested a positive impact of Upward Bound participation on high school graduation, college enrollment,

and baccalaureate graduation were duplicated by the Council for Opportunity in Education (2001).

At the state level, implementation of early intervention programs is rising in popularity. One such program is the Indiana 21st Century Scholars Program. In the 8th grade, low-income students are given the opportunity to contract with the state of Indiana. For their part, the students pledge to graduate from high school, earn 'C' or better grades, abstain from drugs, alcohol, and criminal activity, and enroll in an Indiana institution of postsecondary education within two years of high school graduation.

In return, the state promises to provide mentoring and encouragement programs throughout high school and pay the balance of qualifying tuition and fees during college. The financial aid effectively acts as a 'last dollar' award since the total amount of the award is calculated after other forms of grant aid are considered.

The efforts of the 21st Century Scholars Program have created improved postsecondary opportunity for the low-income (Musoba, 2004; St. John, Musoba, & Simmons, 2002). Specifically, students who took the Scholar's pledge were more likely to aspire to a four-year college and those who fulfilled their pledge were more likely to apply for financial aid. Most importantly, after controlling for a number of background and academic experience variables, the odds of scholars enrolling in college increased by a factor of 4.57, compared to those students who were not affirmed scholars (St. John, et al., 2004).

While evidence supporting comprehensive early intervention programs is mounting, questions still exist about which services are critical to successful interventions. The Washington State Achievers Program is somewhat unique in that it

delays intervention until the last year of high school. A better understanding of the impact of the WSA program will provide additional clarity to our analysis of intervention programs and services; ultimately a deepened understanding of what services are critical will guide policy makers to a more effective allocation of resources.

The Washington State Achievers Program

In 2000, the Bill and Melinda Gates Foundation launched the Washington State Achievers Program. The program's goals were to assist students from sixteen, poor Washington state high schools in attaining a baccalaureate degree. Funding for the program was committed for thirteen years, beginning with the class of 2001 and ending with the high school graduating class of 2010 (funding is committed to the class of 2010 for four years of postsecondary study, ending in 2013). Through significant school-wide and student focused intervention, the Gates Foundation expected to change the culture within the sixteen high schools. The ultimate hope was that going to college would become a natural and expected choice (Bill & Melinda Gates Foundation Website, accessed March, 2004).

By combining school reform with individualized program services and by targeting high-school juniors, the Washington State Achievers (WSA) program offers a unique model of intervention. This dissertation will evaluate the impact of the guaranteed funding component on postsecondary enrollment; it will not address the outcomes of school reform.

High school juniors within these sixteen schools, who are considered low-income and who aspire to baccalaureate degrees, are eligible to apply for the Achievers Award. Emeka and Hirschman (2003) found that approximately 25% of all juniors applied for the

Achiever's Award during the first year of competition (please note this statistic included all juniors, not simply those who were eligible to apply). Of those who applied, 83% received the award; thus, about 500 students from the 16 high schools were named Achievers during the inaugural year.

Achievers receive mentoring and counseling during their remaining time in high school and during the first two years of college. Recipients are also guaranteed financial aid throughout college to cover tuition and fees not met by other grant aid packages.

The unstated assumption of the WSA program is that a student's academic identity can be positively molded during the final year of high school in a way that meaningfully impacts post-secondary opportunity. By their junior year in high school, students have a rich educational biography, but the WSA program believes it is not too late to intervene to shape postsecondary academic choices.

Evaluating the success of the WSA program is not a straightforward task. Unlike a true experiment, where participation in a program is randomly assigned, participants *and* their respective schools self-select into the WSA program (in experimental terms, the WSA program would be considered the 'treatment'). As mentioned previously, schools have self-selected through their willingness to participate in major school redesign.

Students wishing to participate must demonstrate college aspirations as well as a willingness to take college preparatory coursework during their senior year, complete the SAT by a specified date, apply to colleges by a specified date, graduate on time, meet regularly with guidance counselors and a mentor, and enroll in college the fall after high school graduation. To receive the Achievers award, students must demonstrate they want

to follow these guidelines; therefore, there is little randomization when it comes to program participation.

As discussed previously, in non-randomized experiments statistical analysis is frequently tainted by biased estimates. Fundamentally, selection bias may occur because of the inability to identify a comparison group to the treatment group. While creating a model that effectively adjusts the estimates in response to potential bias is unfeasible with this particular study, WSA scholarship recipients can be compared to students within the same school who did not apply for the WSA award, students at other WSA schools, and students at non-WSA participating schools.

There are other questions, related to the selection process, which must also be considered. For example, how does the timing of the application process affect who participates in the program? Since the selection process usually occurs between October and November of one's junior year, is the application timing too late to reach those whose academic identity is already void of post-secondary aspirations? Or, is this application time too early for those still undecided about post-secondary education? Additionally, if the application and award process only attracts highly motivated low-income students, would these same students go to college anyway? In an effort to answer these questions, this study conducted a four phase analysis of the WSA program.

Phase One of the analysis looked at the composition of the student bodies at each of the five high schools, comparing background, family, and academic characteristics. The second phase specified a multinomial logit model to evaluate the impact of various background and academic measures on college choice. This model was run for the entire sample, as well as for participating and non-participating WSA schools in aggregate.

Our understanding of the students, their characteristics, and the elements that influenced their college choice formed the foundation for the rest of the analysis. Phase Three limited the sample to students in WSA participating schools and added a measure for receipt of the WSA scholarship. Finally, Phase Four sought to explore the interaction between background and achievement characteristics and participation in the WSA program. To this end, interaction terms were added to the model.

Ultimately, achieving greater equity in postsecondary opportunity is about creating realizable opportunities and constructing college-bound academic identities. The Bill and Melinda Gates Foundation believes both these objectives can be achieved. By connecting motivated individuals with successful mentors and by mitigating the financial risk associated with college-going, the Washington State Achievers Program seeks to normalize the decision to pursue postsecondary education.

Overview of the Dissertation

The remainder of this dissertation is organized in a manner customary to the tradition of quantitative research. Chapter Two provides an overview of the theories and models which inform my evaluation of the Washington State Achievers Program. Included in this overview are descriptions of two theories: human capital and social capital. Additionally, four empirical models are examined: status attainment, the balanced access model, Hossler and Gallagher's college choice model, and the student choice construct. A critical review of these theories and models, and their use in previous studies, shapes the structure of this study.

Chapter Three describes the methodological approach of the study and the data analyzed in this evaluation. Respondents came from five high schools in one Washington

state metropolitan area. After describing their general characteristics, I will review the structure of the multinomial logit model and the specific independent variables included in the model.

Chapter Four presents a summary of the findings from the statistical analysis. The descriptive statistics and multinomial logit coefficient estimates form the basis for evaluating the impact of the WSA program.

Chapter Five draws from the findings in Chapter Four to highlight major findings of the study. After situating the findings in the larger discourse on postsecondary opportunity, I will discuss the potential role this study has in shaping the direction of future postsecondary policy intervention.

Given the increasing importance of a college education and the perpetual inequity which plagues postsecondary opportunity in the United States today, research on college access and choice could not be timelier. Federal and state governments, foundations, and postsecondary institutions have engaged in a myriad of efforts to mitigate inequities, with varied results. The Washington State Achievers Program represents a unique private effort aimed at improving four-year college graduation rates among those least represented in college. As we come to understand the impact of the WSA program, our understanding of the larger issues surrounding postsecondary opportunity will also gain greater clarity.

Chapter Two
A Review of Theories and Models

Two theories of action are often cited to explain educational decision-making: human capital and social capital. These capital theories are not mutually exclusive as they at times overlap and each provides some of the explanation for why people behave the way they do. Grounding this study on the principles of human and social capital will aid our identification of the causes of academic inequity while providing a framework for our analysis of the Washington State Achievers Program.

A Review of Human Capital Theory

Human capital theory is often cited in the college choice and college access literature (Becker, 1992; Carnevale, 2001; Malveaux, 2003; St. John, 1994). Implicitly, it assumes individuals are rational about their postsecondary plans, that rationality is oriented toward cost-benefit analyses, and that sufficient information substantiates, or informs, the cost-benefit analyses.

The human capital theory is an economic theory based on the premise that capital exists in human potential, "making possible the achievement of certain ends" (Coleman, 1988, p. S100-S101). Education is a form of human capital, inasmuch as it opens doors of opportunity and is considered an investment toward future benefits. Human capital theory suggests individuals and societies make rational educational choices by weighing the expected returns (benefits) against the expected costs associated with a particular choice (Becker, 1964).

Investing in education with the hopes of securing future benefits is not limited solely to individual actors. Governments invest in education under the assumption an

educated citizenry will spur a productive economy, greater participation in democracy, and an improved national quality of life (Price, Wohlford, Nelson, & Singer, 2002).

Likewise, parents invest in the education of their children with an expectation of monetary and non-monetary returns for their child. Presumably, the parental assumption is that education is a calculated investment, which provides the greatest probability of a 'successful' adult life, including higher earnings, greater employment flexibility, and the acquisition of knowledge, among other things.

Steelman and Powell (1991) emphasize that parental investments in human capital (education) are constrained by a family's assets and the number of family members entitled to the family's resources. Parental investment in higher education, therefore, may have more to do with financial constraints than the actual value parents place on postsecondary education.

When analyzing the decision to enroll in college, human capital theorists believe students conduct their own cost-benefit analyses. Some analyses may consist of formalized lists and budget projections, while others may consist of informal internalizations of what choice will yield the greatest possibility for desired returns. Returns, or benefits, often consist of increased income, occupational opportunities, and future job satisfaction, to name a few. The costs to be evaluated include those both direct and indirect in nature. Direct costs consist of tuition, room and board, and incidental expenses incurred as a result of college enrollment. Indirect costs include the opportunity costs, or the benefits given up (such as a full-time job), on account of choosing to enroll.

As mentioned previously, a hallmark of the human capital theory is that educational investments exist in the social as well as the individual domain. Of course,

community cost-benefit analyses are also conducted as a means of justifying social or governmental allocation of resources for the purposes of education. Benefits such as improved G.D.P., larger tax revenue, and lower crime must be weighed against the amount of direct public cost (incurred by institutions and individuals) required to influence college-going behavior. Additionally, indirect social costs associated with postsecondary enrollment, including a depleted work force and diminished tax revenues, are also factored into the analyses.

In the majority of postsecondary access models, human capital theory underscores the choice of the dependent variable. Inasmuch as education itself is considered human capital, measures of educational attainment, educational achievement, or postsecondary enrollment are prime examples of human capital related dependent variables (Advisory Committee on Student Financial Assistance, 2002; McDonough, 1994; Paulsen & St. John, 2002).

Human capital theory has also motivated the selection of several independent variables. Most frequently, these human capital explanatory variables fall within the categories of background socioeconomic status and/or academic preparation. The level of education attained by one's parents is commonly considered an element of socioeconomic status. Parental education is also indicative of the human capital resources available to members of a household. As such, some form of parental education is prevalent in most models of college access (Conley, 2001; St. John, 1991).

Parental education, net of other background, achievement, and social-psychological factors is positively associated with college going behavior. St. John (1991) found a positive relationship between mother's education and college attendance

even after controlling for region of residence, ethnicity, family income, academic

preparation, and educational aspirations.

In an effort to further explore family economic controls, Conley (2001) created

variables to measure income, net worth, and parental occupational prestige.

Notwithstanding the expanded economic controls, parental education remained a positive

predictor of college attendance.

Wang, Kick, Fraser, and Burns (1999) explored the possibilities that the effect of

traditional human capital variables would change by including social-psychological

indicators in the model. Parental education remained positively and significantly

associated with educational attainment, even with the inclusion of self-esteem and locus

of control indeces.

In recent years, it has become acceptable to include only mother's education in

postsecondary models (Paulsen & St. John, 2002; St. John, 1991). St. John (1991) found

that compared to father's education, mother's education was the better predictor of

educational attainment. Considering the increasing number of single parent homes,

mother's education seems a logical measure.

Many postsecondary studies also include measures of academic preparation as

human capital predictors of educational choice and attainment. The inherent assumption

is that higher levels of human capital are positively related to one's future opportunities

for acquiring additional human capital. Put more concretely, one who has excelled

academically in high school has a greater likelihood of pursuing a college degree.

Two measures of academic preparation that are frequently used include high

school G.P.A. (St. John, 1991) and enrollment in academic or college preparatory

coursework during high school (Perna, 2000). After including traditional controls for family background, high school curriculum, and educational aspirations, St. John (1991) still found a significant and positive association between high school grades and college attendance. The statistical significance of high school grades remained even after the sample was limited to only college applicants. Like St. John's (1991) study, Perna (2000) included traditional background, aspirations, and parental involvement measures. Notwithstanding the inclusion of these controls, an 'academic' high school curriculum was found to be significant and positively related to enrollment in a four-year postsecondary institution.

As mentioned in the previous chapter, the statistical importance of academic preparation on postsecondary opportunity is at the heart of current national debate. While common sense supports the notion that those who perform well academically in high school will be more likely to pursue postsecondary studies, the actual modeling of this phenomenon often fails to address the endogenous relationship between academic preparation and postsecondary enrollment.

The fact a greater percentage of honors students enroll in college may be the result of personal qualities completely unrelated to the honors course itself. In other words, taking honors coursework may not be the *cause* of increased college enrollment. The alternative explanation is that those who enroll in honors courses, by their very nature, value college going; thus, honors coursework is simply a natural, intermediate choice on the path to college, not the cause of increased college going behavior.

Certainly the tenets of human capital theory may explain postsecondary enrollment choices for some students, particularly those considered most advantaged.

But, many students lack reliable information and may base their rational college plans on

non-economic measures. To fill in the gaps, unexplained by economic theory, college

choice and access literature frequently draws from the reservoir of sociological theory.

A Review of Social Capital Theory

Social capital theory seeks to explain variance in the creation of human capital

(Coleman, 1988). The theory has been widely used in educational literature as an

explanation for academic achievement and attainment (Croninger & Lee, 2001; Furr,

1998; Israel, Beaulieu, & Hartless, 2001; Sun, 1999; Valadez, 2002). It implies that one's

social relationships produce a type of non-economic resource that ultimately influences

one's life experience and endows one with power. In other words, social capital theory

seeks to identify the social contexts conducive to the development of human or other

forms of capital (Sun, 1998).

Social capital, "exists in the relations among persons" (Coleman, 1988, ppS100-

S101), and comes in three identifiable forms: obligations, expectations, and

trustworthiness of structures; information channels; and, norms and effective sanctions.

Social capital exists (therefore human capital can be generated) when trust and

trustworthiness pervade a social structure and when an actor has the assurance that he or

she could draw on the human or economic capital available within the social structure.

Like human capital theory, social capital is grounded on the assumption of

rational behavior; unlike human capital theory, however, rational behavior is sensitive to

the impact of social context. In other words, "rational" behavior is not fixed and absolute.

What may be rational for one individual, given their social experience and environment,

may be different for another individual within a different social context. The scope of

social capital is inclusive of all social interaction. Generally speaking, social capital is considered to exist within and outside of families and at various levels of community (Sun, 1999).

Two dimensions of social capital are frequently differentiated: structural and process. The structural component refers to the actual social setting within which one makes choices; it includes the types of relationships available to an actor. For example, does the child live with two parental figures and are there other adults with whom the child can interact? The process component refers to the intentional interaction, whether it be between parents and children or between families and institutional agents; in essence the process dimension constitutes the actual investments an actor makes with one's social capital resources (Israel, Beaulieu, & Hartless, 2001; Smith, Beaulieu, & Seraphine, 1995).

Social capital is often used to explain differences in college enrollment and college choice decisions (Perna, 2000). In fact, Perna (2000)[1] claims the inclusion of social and cultural capital variables improves the explanatory power of the traditional econometric, college access models. Other researchers have found that the effects of social capital on college attendance differ by race, ethnicity, and place of residence (Smith, et al., 1995). One striking finding from Smith, et al.'s (1995) study concerned the influence of parental involvement. While parental involvement had a statistically significant and positive effect on college going for the entire sample, the positive parental involvement effect was not experienced by Hispanic, suburban, nor rural students.

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[1] For the purpose of her study, Perna did not distinguish between social and cultural capital, though the mechanisms included in her analysis are common to studies of social capital.

The influence of social capital also impacts the high school experience. Inasmuch as high school completion is strongly linked to postsecondary enrollment, it is interesting to note that Croninger and Lee (2001) found social capital increased the likelihood of completing high school, especially for those students considered "at-risk."

Since postsecondary enrollment is a type of human capital, and since Coleman claims the value of social capital lies in its ability to create human capital (Coleman, 1988), it makes sense for access models to incorporate measures of social capital. Three categories of social capital variables are commonly used in the postsecondary access literature: family structure, parental involvement, and social networks.

Social Capital – Family Structure. Family structure variables often include measures for two-parent families and sibship size. In this dataset, two-parent families refer to those households where a child's biological mother and father are both present. The assumption is that the presence of both parents in a child's home provides the child access to greater amounts of social capital.

In his seminal work on social capital, James Coleman (1988) found that two-parent families were associated with a reduced likelihood of dropping out of high school (see also: Carbonaro, 1998). Roscigno and Ainsworth-Darnell (1999) similarly found a negative impact between step and single parent homes and high school grade point average. Other studies have claimed that Latino and Asian students in one-parent homes score lower on math achievement tests (Sun, 1998) and that White and Latino single-parent homes reduce the likelihood of the child's taking advanced math in high school (Valadez, 2002).

On the other hand, Smith, et al. (1995) found one-parent homes to be statistically non-significant in their relation to college attendance. The dependent variable used by Smith and colleagues, however, measured any postsecondary attendance. It may be that when considering two- and four-year college enrollment combined, two-parent family status is less predictive of college access. Further research is needed to determine whether two-parent family status has an effect on college choice, not just an effect on any form of postsecondary enrollment.

Sibship size refers to a child's number of siblings (biological, step, and adopted). Number of siblings has been included in a few postsecondary models with the assumption that as sibship size increases, a child's access to social and financial capital decreases (Smith, et al., 1995; Steelman & Powell, 1991). In effect, this theory surmises that the amount of social and financial capital in a home is limited and that children in larger families are in competition for scarce family resources.

One study reported a negative association between sibship size and postsecondary enrollment for students residing in urban, suburban, and town locales (Smith, et al., 1995). Steelman and Powell (1991) found a significant and negative association between sibship size and parental responsibility for assisting with college costs. Not only did larger sibship sizes increase the likelihood that parents felt college costs were more the student's and the government's responsibility (compared to the parent's), but increasing sibship size reduced the total amount of savings accumulated for the child's postsecondary plans.

Consistent with the prevailing attitudes toward sibship size and educational outcomes, previous studies have found a negative effect of sibship size on high school

grades (Downey, 1995; Roscigno & Ainsworth-Darnell, 1999) and educational attainment (Teachman, 1987). Interestingly, Downey (1995) found a mitigating effect of parental involvement on sibship size. The more parents held frequent discussions with their children and the greater the educational expectations parents had for their children, the less negative an effect sibship size had on educational achievement.

Sibship size appears to have varying effects on educational achievement, based on race and ethnicity. Valadez (2002) found that sibship size was negatively associated with taking algebra and advanced mathematics in high school for White students, but not for Latinos. Interestingly, Sun (1998) found a negative association between sibship size and math and science achievement for Asian students, but not for Whites, Latinos, nor African Americans.

While saving for college and educational achievement measures are not directly linked to postsecondary access nor choice outcomes, the previous studies provide some rationale for believing sibship size may impact postsecondary choices.

Social Capital – Parental Involvement. Parental involvement variables frequently include measures for the frequency with which parents and children discuss school and engage in in-depth conversations, and the comfort a child feels in going to his/her parent(s) for advice. Perna (2000) found a significant and positive relationship between four-year college enrollment and the frequency with which parents and child engaged in academic discussions. Similar findings were reported by Cabrera and La Nasa (2001), who found that frequent parent-child academic discussions improved the likelihood of the child's becoming academically college qualified, graduating from high school, and applying to college.

The effects of frequent scholastic discussions may not be constant across all ethnicities. Sun (1998) found the positive effect of parent-child discussion on math achievement was statistically smaller for Hispanic and African American students than for Asian and White students. Similarly, Valadez (2002) reported a positive relationship between parent-child academic discussions and high school mathematics course selection. While greater frequency of academic discussions increased the odds of Latino students enrolling in algebra and advanced mathematics, White students only experienced an increase in the odds of taking advanced mathematics.

The Sun and Valadez studies present an interesting storyline for Latino students. Valadez (2002) claimed that Latino students who discussed academic matters with their parents were more likely to take college preparatory mathematics. Sun (1998), however, suggested the benefits of scholastic discussion on math achievement scores were not experienced by Latinos like they were for White and Asian students. In other words, greater amounts of parental involvement seemed to increase the likelihood of Latino students enrolling in college preparatory mathematics, though achievement scores failed to improve as dramatically as they did for White and Asian students.

Social Capital – Networks. The final aspect of social capital reviewed here relates to social networks. Many scholars distinguish between the social capital cultivated within a family and the capital cultivated without. Ultimately, a child's social network influences her/his opportunities and choices. Three aspects of social networks are often incorporated as measures of social capital: the degree of network closure, the student's relationship to educational providers, and the student's peer network.

James Coleman considered closed networks fertile ground for the development of social capital (Coleman, 1988). The concept of closed networks can best be illustrated by considering four families: A, B, C, and D. If we assume families A and B, B and C, C and D, and D and A are friends, then this group of four families constitutes a closed network. Even though families A and C may not know one another, their mutual associations create a network of connected families that serves as a potential resource for all four families.

In educational research, the most commonly described closed network refers to relationships between parents who have children at the same school. Because most surveys are unable to ascertain the true characteristics or nuances of these inter-family relationships, most closure variables simply identify whether a student's parents *know* the parents of the student's friends.

The few studies that have measured closure have reported positive relationships between closed networks and educational outcomes. In fact, closed networks are positively associated with not dropping out of high school (Carbonaro, 1998; Israel, et al., 2001). While studying the determinants of math achievement scores, Sun (1998) found a statistically significant relationship between closure and improved math achievement.

Another common measure of a student's social networks is the relationship between the student and educational providers. Possible education providers include a student's teachers and school counselors. In their analysis of at-risk students, Croninger and Lee (2001) reported that out-of-class student-teacher interaction reduced the likelihood of dropping out for students academically at-risk *and* for those not at-risk. Further research is needed to determine if student interaction with teachers is associated

with different educational outcomes than student interaction with school counselors or other educational providers.

Common sense suggests a student's peer network will have a significant impact on the educational choices made by the student. Indeed, Teachman (1987) found a positive relationship between educational attainment and friendship groups when a majority of friends planned to attend college. Likewise, Carbonaro (1998) found for students who reported that some, most, or all of their close friends had dropped out of high school, the odds of dropping out increased by more than three-and-a-half times.

The statistical impact of peer networks on educational outcomes, however, is not conclusive. In her study on four-year college enrollment, Perna (2000) reported that peer encouragement was not significantly associated with four-year enrollment the fall after high school graduation. Perhaps peer networks were correlated to other student characteristics like socioeconomic status or educational achievement; or, perhaps the effect of peer groups was sensitive to the measurement used. It may be that peer decisions to drop out or peer achievement in terms of grades and test scores are better predictors of student behavior than more subjective measurements like peer encouragement.

From this brief discussion of social capital, it is clear social capital theory holds promise as a lens through which to view postsecondary behavior. It merits noting that while an array of variables are often used to measure social capital, no consistent set of mandatory measures has been generally agreed upon. For this study, I have chosen measures consistent with previous social capital research and identifiable given the data set.

Why Not Cultural Capital Theory

Let me now offer a brief explanation at to why the concepts of cultural capital are not explicitly included in the framework of this study. Cultural capital (Bourdieu, 1977) refers to the intangible cultural resources an individual possesses that assist an individual in navigating life choices and social structures. Indeed, these very cultural resources shape an individuals identity, perceptions, and motivations and form the basis for the meaning an individual attaches to life events.

Central to the concept of cultural capital is the notion of elitism and social reproduction (McDonough, 1994; Walpole, 2003). Capitalist structures equip the upper class with cultural capital that can be converted into power (Perna, 2000). This power is chiefly produced within families and transmitted from parents to children (Kingston, 2001; McDonough & Antonio, 1996).

The true efficacy of cultural capital, as an explanatory theory of action, rests upon a number of important assumptions. First, cultural capital is assumed to consist of widely shared upper-class values and signals (Lamont & Lareau, 1988). These are the values, language, and norms of the elites. Second, the privileged actively seek to exclude others from obtaining and using their cultural signals. This exclusionary behavior is motivated by the desire to ensure elite status for children of the elite (social reproduction). Lastly, and importantly to this study, it is assumed that cultural capital is rewarded by schools (Aschaffenburg & Maas, 1997). Though cultural capital is assumed to be created in homes, not in schools, educational institutions are considered agents of the elite and, therefore, children of the elites are rewarded by the educational system.

In educational literature, the most common measurements of cultural capital include activities such as reading the newspaper and attending museums, theatrical events and other 'high' culture events. The assumption is that participation in artistic endeavors represents elite behavior and is rewarded by society, particularly educational providers.

While cultural capital theory provides compelling insights into theories of identity and motivation, questions remain about the validity of the theoretical assumptions. In addition to questions surrounding whether a shared high culture even exists in the United States (Kingston, 2001; Lamont & Lareau, 1988), no significant evidence exists that elite artistic orientation explains why socially advantaged students perform better in school (Kingston, 2001; Sullivan, 2001; Sun, 1998). Furthermore, Weininger and Lareau (2003) question the importability of Bourdieu's concept of families creating cultural capital and schools rewarding the elites, since policies and practice explicitly encourage parental involvement in U.S. education. Thus, are schools truly acting only in the best interest of the elites?

Explanatory variables, specific to the theory of cultural capital, may have been included in this study if I thought they explained some of the variation in college going behavior and were independent of other socioeconomic and social capital controls. The human and social capital measurements included here effectively controlled for differences in student background and social status. Additionally, the data was analyzed by school. To address the possibility of variation in school cultures, the analysis grouped students by institution, ultimately providing a means for grouping students with access to similar types and levels of cultural capital.

The omission of cultural capital as an explicit explanatory measure in this study should not be interpreted as a dismissal of the principles underlying the cultural capital theory. Our society extends privilege to those in possession of valued cultural norms. Furthermore, this privilege is reproduced in subsequent generations. Because of the frequent overlap between social and cultural capital, however, and given constraints specific to the data of this study, it seemed most appropriate to apply a label of 'social capital' to the independent variables used here. My assumption that cultural capital interacts with social capital and educational choices will become apparent in future sections of this paper; but, the explanatory variables will be described as human or social capital in nature.

Models Informed by Theory

Theories of action often take an abstract perspective to explain human behavior. They inform our understanding of the human condition but they are difficult to evaluate or test (for example, it is difficult to get perfect data regarding closed networks and the efficacy of specific relationships). To better understand the elements that motivate daily behavior, like educational choice, researchers construct models. The status attainment, balanced access, college choice, and student choice models will be reviewed here. Each of these models are, to some degree, grounded on human and/or social capital theory and each seeks to provide an empirical basis for understanding educational choice.

Independently, models can only paint part of the picture. The status attainment model suggests a framework for understanding the forces that influence one's socioeconomic attainment, the balanced access model proposes a construct for identifying the constraints to postsecondary opportunity, the college choice model offers

a framework for understanding how students choose a college, and the student choice

model suggests a construct for identifying the individualized and contextual nature of

educational decision making.

Given the complex nature of educational decision-making, one can imagine the

four models operating interdependently with each other. For example, the college choice

process is very much related to one's access to postsecondary institutions, both of which

are unique to each student's situated context and influence one's long-term attainment.

The image of interdependent models, operating within an environment best described by

the notions of cultural capital and grounded on the theoretical underpinnings of social and

human capital theories described is diagrammed in Figure 1.

Figure 1. Theoretical and Empirical Interdependency
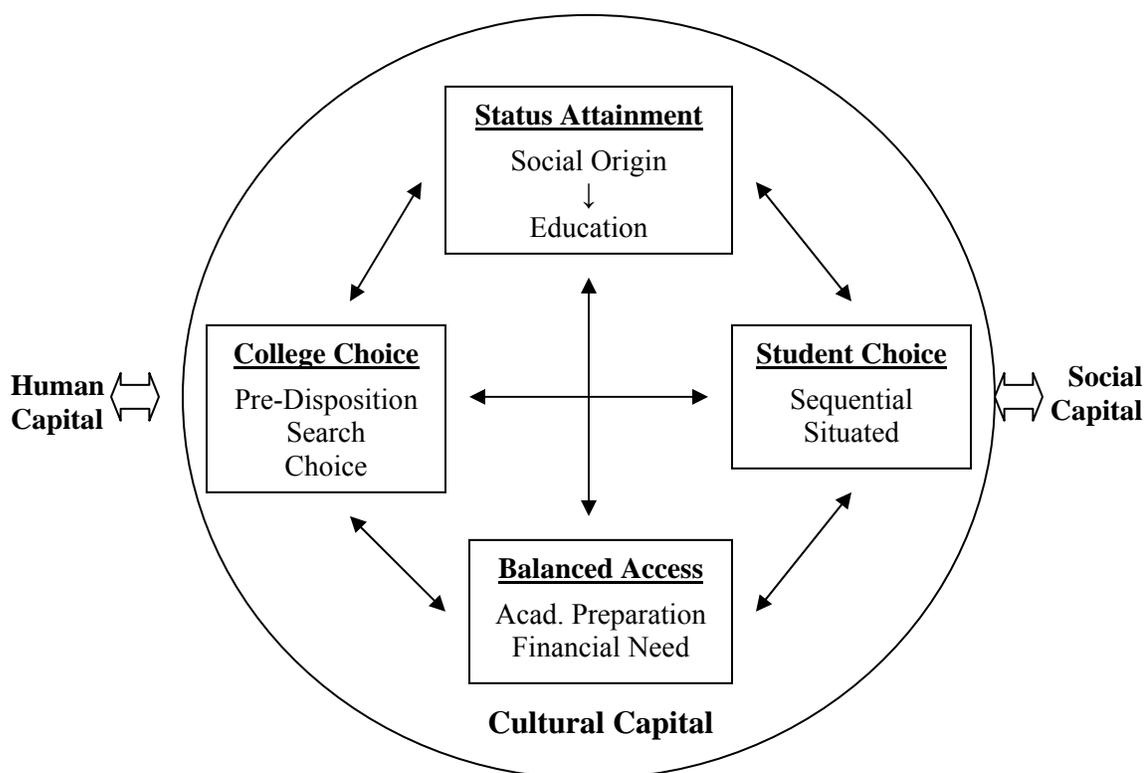
With an understanding of human and social capital, we are in a position to explore in greater detail the four empirical models. A holistic conceptualization of interdependency, between theory and model, will enable us to adequately evaluate the Washington State Achievers Program.

A Review of the Status Attainment Model

The status attainment model became widely popularized in the late 1960's and early 1970's (Blau & Duncan, 1967; Sewell, Haller, & Ohlendorf, 1969; Sewell, Haller, & Ohlendorf, 1970). Since then, the status attainment paradigm has been a driving force in shaping sociological and educational research (Haas & Falk, 1981).

While econometric theory views college choice and access as rational decision-making constrained by cost-benefit analysis, the status attainment model views college choice as a process constrained by many economic *and* sociological factors. In fact, the social components of status attainment act to narrow a student's choice possibilities from the day s/he is born.

In its most common form, the status attainment model assumes that characteristics associated with one's social origin influence one's attitudes and aspirations, which influence one's experiences and achievement, which ultimately influence the status (in terms of education or occupation) one attains (for an example, see Pascarella, Smart, & Stoecker, 1989). At this point, it should be clear the status attainment model is based on assumptions of causality and linearity.

Within the education realm, status attainment research attempts to explain the variance observed in academic achievement and attainment (Palmer, 2003). Studies have conclusively shown that postsecondary opportunity and educational aspirations vary

based on one's socioeconomic background, including race/ethnicity, social class, and gender, even after controlling for academic achievement (for examples, see Palmer, 2003; O'Connor, 1999; McGrath, Swisher, Elder Jr., & Conger, 2001).

Common proxies for social origin are often similar to those associated with human capital theory, including parental income level, parental education level, parental occupation, race/ethnicity, and gender. As discussed in the 'human capital' section, higher levels of parent education have repeatedly been tied to improved likelihood of college attendance (Conley, 2001; St. John, 1991; Wang, et al., 1999). The impact of parental education on postsecondary enrollment affirms status attainment modeling; namely, that highly educated parents enjoy a higher level of social status which they pass on to their children and which aids the child in his/her own educational pursuits.

Inasmuch as 'status' implies one's position relative to others within a society, the status attainment model is clearly grounded in social theory, including social capital. In fact, some measures included in status attainment models are identical to those often cited in social capital work. Steelman and Powell (1991) included family structure measures like parental marital status, sibship size, and respondents' ordinal sibship position in their status attainment model. The assumption underlying the inclusion of family structure measures is that social status can also be derived from normative family arrangements, such as two-parent households. As expected, Steelman and Powell (1991) found that two-parent homes were positively associated with greater levels of parental investment in the child's education, while number of siblings was negatively associated with parental investment.

Social capital process and structure measures, including parental involvement and participation in community groups, may also be included in the status attainment model (McGrath, Swisher, Elder Jr., & Conger, 2001). McGrath, et al. (2001) found a positive relationship, of marginal significance, between parental forms of social capital and the child's subsequent enrollment in four-year postsecondary institutions. Parental participation in community groups and in a child's school had a positive effect for the entire sample. Interestingly, the positive effect associated with these forms of social capital were even larger for students from higher status families (also marginally significant). Here again is the assumption that a family's social status can be, at least in part, measured by their social interactions.

While many status attainment models include social psychological measures, like aspirations, locus of control, self esteem, parental expectations and peer expectations, this paper will only include a measure for parental expectations. Since the survey instrument used in this analysis was administered after the selection of Washington State Achievers, the use of educational aspirations is problematic. It would be impossible to untangle whether postsecondary aspirations influenced the likelihood of receiving the Achiever's Scholarship and ultimate enrollment in college, or if receipt of a full-ride scholarship influenced one's postsecondary aspirations. Using self-esteem and locus of control indices would potentially create additional limitations since these indices employ culturally hegemonic definitions of self-esteem and self-efficacy and may also be tied to the results of the WSA scholarship competition.

Some scholars have argued against the inclusion of social psychological variables altogether. Haas and Falk (1981) argue that inserting social-psychological variables into a

causal model violates the very Meadian framework upon which social-psychology is grounded. Their point is that the Meadian framework assumes one's environment is dialogically constructed. In other words, a Meadian perspective assumes that reverse causality exists between an individual actor and his/her environment; clearly this perspective violates the principle of linear causality upon which status attainment models are grounded.

The status attainment limitation articulated by Haas and Falk (1981) carries with it important implications. By its very nature, the tenets of status attainment are that exogenous social origin characteristics set in motion a chain of life experiences, similar to a domino chain. This assumption raises the question: what if elements of the status attainment model, including measures like aspirations and achievement, are *endogenous*?

Because we will come back to this issue of endogeneity later, I will offer a brief explanation now. Causal models assume an outcome is the result of a factor, or series of factors, immediately preceding it. For example, going to college is considered an outcome influenced by one's high school experience, which was influenced by one's educational aspirations, which were the result of one's social class, which was the exogenous 'starting point.' But, what if an element of this chain was affected by an outcome that comes after it? In other words, what if reverse causality existed?

One might believe an endogenous relationship exists if high school experience and educational aspirations are affected not only by one's social origin, but by the financial feasibility of going to college. In this case, an element of the linear chain (feasibility of going to college) influences and is influenced by the elements preceding it (G.P.A., college preparation curriculum, etc.), thus creating an endogenous relationship.

Becker (2004) and Heller (2004) have both highlighted the dangers of endogeneity bias inherent in recent postsecondary education research. In recent years, the National Center for Education Statistics (NCES) has published multivariate analyses which claim financial need does not diminish the likelihood of college attendance, once one controls for college qualifications. The claim is that students who are academically prepared and take the proper steps to apply for college, apply and enroll in four-year institutions at similar rates, regardless of financial background.

Claiming that financial background fails to influence college attendance in any statistically meaningful way assumes that being college qualified is the exogenous 'starting point,' in a model of postsecondary access. In other words, supporters of this line of thought assume that characteristics of college attendance, such as the price of college, do *not* influence a student's likelihood of becoming college qualified. Heller (2004) and Becker (2004) believe this to be an erroneous claim. They argue that becoming college qualified is endogenous to college access. Heller (2004) offers a clear explanation:

> If high tuition prices and lack of information about financial aid as early as the middle school years discourage a low-income student from considering college as an option, then she is not likely to take the college preparatory course sequence defined by NCES. If the student does not take this course sequence, then it is unlikely she will, one, score at the level necessary on the aptitude tests administered by NCES to satisfy the test score criteria for college qualification, and, two, be encouraged to take a college entrance examination. And, if she does not take a college entrance examination, or score at a sufficient level on one of those tests, then it is unlikely she will be encouraged to apply to a four-year institution. (pp. 45-46)

As Heller points out, characteristics of college attendance do indeed influence one's becoming college qualified and ultimately one's postsecondary choices. The causal

nature of the status attainment model is not inherently a fatal flaw; but, clearly caution is required when specifying relationships, so as not to assume exogenous causality when in fact an endogenous relationship exists. The Balanced Access Model is one attempt to show the causal, sequential nature of college access, while accounting for the endogenous relationships of influential factors.

A Review of the Balanced Access Model

The balanced access model consists of two major, interrelated components: academic preparation and financial need (St. John, 2002a). In many respects, St. John's model is a reconstruction of the oft-cited access pipeline model.

The access pipeline model has been popularized by the National Center for Education Statistics (NCES). Five steps comprise the pipeline: aspiring to postsecondary education, preparing academically, taking college entrance exams, applying to college, and enrolling in college (Choy, 2002). Students are assumed to enter the pipeline as they form postsecondary aspirations. The subsequent steps of preparation, application, and enrollment represent the sequenced path to college. Each of the steps also represents a potential hole in the pipeline where a student could fall out or stray away from the preferred college going path.

Academic preparation is viewed by many as the real lynchpin of college access (Cabrera & LaNasa, 2001). In fact, some studies have attempted to identify the specific high school courses that most accurately predict college attendance (Adelman, 1999; Choy, 2002). The fundamental assumption is that a college preparatory high-school curriculum catapults one into college. Proponents of this line of research would have policy interventions focus on increasing the number of students enrolled in Algebra II

and Physics. While such an objective may indeed be beneficial, the logic itself is endogenous. As described by Heller (2004), it is impossible to extract whether taking Algebra II causes one to proceed to college or if one's plans to pursue college cause one to take Algebra II.

Reliance on the academic preparation argument, in exclusion of other financial and cultural explanations for inequity, has the potential for significant and unfortunate policy consequences. If policy efforts concentrate simply on math and science course-taking, we miss entirely the origin of access inequity. Will taking Algebra II remedy the financial burden of college attendance or will it provide a student with greater information regarding postsecondary opportunity?

Notwithstanding the logical faux pas frequently evident in the academic preparation argument, academic preparation is obviously important to postsecondary opportunity. Tierney, Colvar, and Corwin (2003) found that 71% of students completing a rigorous high-school curriculum persisted to four-year degree completion. Furthermore, poor academic preparation not only negatively shapes one's academic identity but it limits the available set of postsecondary options. Even four-year campuses with open admissions policies require the completion of pre-requisite coursework for a student to gain full admission.

St. John (2002a) reconstructed the pipeline model by acknowledging the interdependent influence of academics *and* finances on college-going behavior. A student's unmet financial need, as perceived by the student and her family, as well as other background characteristics influence a student's aspirations, academic preparation, entrance examination decision, and application choices. The cumulative effect of one's

educational choices, as well as the actual unmet need a student would incur through enrollment, affect the student's enrollment and persistence decisions.

The decision to include financial measures in the Balanced Access Model has been substantiated by subsequent research. Extensive scholarly activity has identified a significant and negative relationship between insufficient financial resources and postsecondary enrollment (Advisory Committee on Student Financial Assistance, 2002; Terenzini, Cabrera, & Bernal, 2001). Regrettably, the real cost of college continues to increase for those least able to afford it. In the early 1970's, low-income families needed 42% of their income to meet the costs of a four-year public institution. This number rose to 62% by 1999. In contrast, the percentage of income needed to meet college costs remained relatively stable for middle-income families, increasing from 13% to 16% (College Board, 2000).

The increasing financial demand of college on low-income families comes at a time when student-aid is failing to keep up with escalating tuition costs. In 1975, a maximum Pell Grant covered approximately 84% of the total costs of college attendance, yet by 2001, the coverage had dropped to 42% (College Board, 2002). While the average income of a family with at least one child grew by 17% between 1979 and 1999, after adjusting for inflation, tuition at public four-year institutions grew by 91% (Stiglitz, Tyson, Orszag, & Orszag, 2000). Thus, for low-income students, the cost of college attendance has risen dramatically relative to family income; yet, support in the form of grants has often been too limited to offset the growing un-affordability.

The type of student aid offered to a student also matters. Since the late 1970's, the federal government has been shifting aid resources from student grants to student loans

(Mumper, 1996). Students of color and low-income students are less responsive to student loans than to student grants; thus, the gap in college opportunity, along racial and class lines, reemerged in the early 1980's and remains today (Heller, 1997; St. John, 2002b). As the balanced access model suggests, without adequate financial policy intervention, low-income students are less likely than their wealthier peers to progress to college, regardless of academic preparation.

Because *perceived* unmet need motivates many educational choices, information awareness plays a paramount role in the balanced access model. Access to accurate information regarding the costs of college and student aid options are critical to the construction of perceived unmet need. Unfortunately, low-income, first-generation, and ethnic minority students are less likely to obtain sufficient and accurate information by which to make these life changing educational decisions (Cabrera & LaNasa, 2000; Ikenberry & Hartle, 1998; Venezia, Kirst, & Antonio, 2003).

Interventions can address the financial and information awareness needs. Through student aid and tuition policies, the state and federal government can intervene to reduce the amount of unmet need. Furthermore, schools can influence the quality of information all students receive through information dissemination programs (St. John, Musoba, Simmons, Chung, Schmit, & Peng, 2002).

Fundamentally, the balanced access model provides an academic and financial explanation for why some students fall out of the access pipeline. This explanation is grounded on the two capital theories. From an economic perspective (human capital theory), students and their families perform cost-benefit analyses to determine whether to

take college preparatory courses, to take the SAT, to apply to college, and ultimately whether to enroll in college.

Each of these cost-benefit analyses is also influenced by one's access to social capital. The availability of social capital determines a student's access to postsecondary information, the opportunities for academic development, and ultimately how the student navigates the college choice process. As was stated earlier, children realize greater educational achievement when parents are involved in their education and when parents are connected to a network of other interested parents. Furthermore, a student's educational path is significantly shaped by the educational choices of peers and by the student's relationship with educational providers. While these social measures can do little to address the financial aspect of balanced access, they are critical to determining the quality of information at a student's disposal and to providing opportunity for academic preparation.

Greater detail will be provided later, but it merits noting here that the services provided by the Washington State Achievers Program are consistent with the logic of the balanced access model. Financial assistance for pursuing postsecondary education is provided to low-income students and the environment within which the students are educated is infused with social capital, thereby addressing both the human and social capital needs of college attendance.

A Review of Hossler and Gallagher's College Choice Model

Many models have sought to describe the college choice process, but Hossler and Gallagher's (1987) college choice model provides a widely accepted construct. Concerned primarily with student behavior (as opposed to external influences like

institutional behavior), the college choice model consists of three phases: a pre-disposition stage, a search stage, and a choice stage.

College Choice – Pre Disposition Stage. Pre-disposition is similar to aspirations, but the focus is on the *decision* to do something, not merely the intention of doing so. As might be expected, "Parents' expectations and encouragement have the greatest effect on the predisposition stage" (Hossler, Schmit, & Vesper, 1999, 28). In addition to parental influence, student achievement, student involvement, peers, and socioeconomic status also influence the development of postsecondary dispositions.

Hossler, et al. (1999) found variance in the development of college plans by gender and race. Females and Caucasian students were more likely to think about postsecondary opportunities and to discuss their plans with others. In addition to gender and race, socioeconomic background has also been found to influence college plans. Poor and working class students generally aspire to lower levels of postsecondary education than their middle and upper income peers (Paulsen & St. John, 2002).

College Choice – Search Stage. As students formulate plans for life after high school, they identify those postsecondary institutions which may be of interest to them. Interaction between students and institutions increases during the search stage as students seek out information about postsecondary opportunities and revise their list of potential institutions at which to apply.

During the search stage, which typically covers a student's sophomore and junior years, aspirations for college attendance tend to remain stable or even increase. While many students begin considering possible postsecondary institutions as early as the ninth grade, by the junior year in high school, students become active college information

gatherers. Surprisingly, students seem more sure of the institutional attributes which are important to them while they are sophomores, than they do during their junior year (Hossler, et al., 1999).

In a qualitative study of the college choice process, Hossler et al. (1999), found that parents play a critical role in helping their student navigate the search stage. In fact, "Parents who regularly talk to their children about college provide the encouragement necessary to promote a full exploration of educational options" (Hossler, et al., 1999, 66). Hossler, et al.'s (1999) findings support the evidence regarding the importance of educational communication between parent(s) and child.

College Choice – Choice Stage. During the choice stage, students compare attributes of potential postsecondary institutions and through a cost-benefit analysis select an institution at which to enroll (Hossler, et al., 1999). At this stage, the elements of the balanced access model become especially relevant to college choice. By the time a student reaches the choice stage, a student's academic preparation may influence the perceived compatibility of a chosen institution more than one's academic qualifications to attend such an institution (already determined in the search stage). Additionally, finances play a critical role in determining a student's postsecondary destination.

As with the other stages of the college choice process, the choice stage is experienced differently for those of underrepresented ethnic and socioeconomic backgrounds. Lower income students are less likely than higher income students to enroll in four-year colleges, to enroll in private colleges, and to enroll full-time (Paulsen & St. John, 2002; Terenzini, Cabrera, & Bernal, 2000). The gaps in enrollment based on social class persist even among students who are college qualified (Advisory Committee on

Student Financial Assistance, 2001). Further, White and Asian students are more likely than Black and Hispanic students to enroll in four-year colleges (Choy, 2002). In fact, among students of color who attended a postsecondary institution, nearly two-thirds of Hispanic and nearly one-half of Black students enrolled in two-year colleges (Bailey, 2002).

Support and encouragement from home, the school, and peers influence the formation of aspirations, college search, and ultimately college choice. Additionally one's socioeconomic background and academic preparation are highly associated with a student's path through the stages. As has been reported earlier, these determinants of college access and choice are often modeled with measures for parental education, parental income, parental involvement, social networks, and academic preparation.

Through information awareness and the facilitation of parental involvement, intervention efforts have the potential to positively shape the pre-disposition stage. Hossler et al. (1999) believe intervention programs need to begin as early as fifth and sixth grade and that they should focus on delivering information on college opportunities and college costs to students and their parents.

Information dissemination is critical since awareness of postsecondary opportunities and costs is not distributed equitably. Upper-income students report a greater variety of college information sources and more accurate information on college costs than low-income students, for whom the high school guidance counselor is often the only source of information (Cabrera and LaNasa, 2000; Ikenberry and Hartle, 1998).

Our understanding of the college choice model is informed by the tenets of human and social capital theory. The ultimate decision of which institution to attend (if any) is

motivated, in large measure, by dollars and cents. Students must determine what institutions are financially feasible options and which institution promises the best investment, given the student's unique circumstances. Human capital theory is at work here as students sort through present financial constraints and long-term economic aspirations.

Conducting a cost-benefit analysis, no matter how formalized or sophisticated, is an imperfect science. Students are dependent on the information at their disposal, they are constrained by their own field of view, and the future is never perfectly predictable. Accurate and abundant information is critical to the pre-disposition, search, and choice stages, which clearly draw on one's access to social capital.

It should now be apparent that during the college choice process, human and social capital often intersect, simultaneously influencing a student's behavior. Social capital impacts the degree of trust a student places in formal education as well as a student's access to adequate information needed to make informed decisions. In this process, students attempt to identify which choice offers the best human capital investment for their future. It is a process perhaps best described as imperfect rationality and it is unique to each individual.

A Review of the Student-Choice Construct

The student choice construct evolved out of the desire to recognize the situated nature of an individual student's enrollment and persistence choices. Traditional theories of student development (Chickering, 1969) and student change (Astin, 1993) were insufficient student models because, "the logic of these models adapted concepts that evolved from studies of traditional-age middle class students without fully considering

the diverse patterns of choice related to the diversity of experiences across different groups of students" (Paulsen & St. John, 2002, p 191).

Paulsen and St. John (2002) identified three underlying assumptions of the student choice construct: first, postsecondary educational choices, including aspirations, choice of college, choice of major, persistence decisions, and graduate school choices are made in a sequence; secondly, there are diverse patterns of student choice; and lastly, postsecondary choices are made by students in situated contexts.

Paramount to the student choice construct is the notion that throughout the sequence, state and financial policy interventions are necessary. Primary avenues of policy intervention include postsecondary information, student aid, tuition costs, and debt forgiveness (Paulsen & St. John, 2002).

Previous empirical work reporting the impact of socioeconomic status, parental education, parental involvement, social networks, and academic preparation is also applicable to the student choice construct. In addition to the findings already cited, intervention programs are found to positively influence college going behavior when they link student achievement with the building of family partnerships and when they take a balanced approach to developing student aspirations, preparing students academically, and reducing the amount of unmet financial need (Kezar, 2001; Roderick & Stone, 1998; St. John, Musoba & Simmons, 2002).

Given the parental role in providing accurate college information, it is important that parents have equitable access to accurate information. At present, the ability of parents to accurately estimate college costs is associated with household income and parental education level (NCES, 2003).

The situational aspect of student choice is supported by the concept of social capital theory. Students make choices that are influenced by unique family situations and unique social networks. Models which include measures to control for individual context are consistent with the premises of the student-choice construct.

A Review of the Use of the UW-BHS Senior Survey

Three studies of special interest have conceptually drawn from the models just reviewed. Because these three studies drew from the same data set as our current study, a brief review of the complementary research is in order.

Since 2000, the University of Washington has conducted a survey of high school seniors residing in a Washington state metropolitan area. The University of Washington Beyond High School (UW-BHS) senior survey asks respondents to comment on various educational, sociological, and psychological issues, relating to their past experience, present feelings, and future expectations.

Recently, three research studies have used the UW BHS senior survey data to explore questions related to postsecondary education and the Washington State Achievers Program: Hirschmann, Lee, and Emeka (2003) explored the influence of race and ethnicity on educational ambition; Emeka and Hirschmann (2006) examined the characteristics of those who applied for the WSA scholarship and those who were ultimately awarded the scholarship; and lastly, St. John and Hu (2006) analyzed the

impact of the Washington State Achievers program on postsecondary aspirations and postsecondary enrollment.

The underlying question in Hirshmann, Lee, and Emeka's (2003) study centered on the relationship between race and ethnicity and student plans to attend a four-year college the fall after high school graduation. Many theoretical traditions guided their conception of the study and interpretation of the results. Three theoretical concepts were particularly influential: the assimilation model, the segmented assimilation model, and social capital. Since the current study also draws from social capital, a brief discussion of their use of social capital follows.

Hirschmann, et al. (2003) clearly stated that the theoretical traditions incorporated in their study contained numerous points of overlap. Their perception was that the theories often shared conceptual underpinnings as well as common mechanisms for measurement. Ultimately, their methodological approach was to include measures which were appropriate to a number of theories. This last point is an important one. While it is impossible for the reader to determine with exactness which variables were linked to which specific theories, measures of social capital were clearly included in their model. Specifically, Hirschmann, et al. (2003) included measures for two-parent family status and parental involvement.

Among seniors who participated in the UW-BHS senior survey, two-parent family status was associated with an increase in the odds of planning to attend a four-year college the fall after high school graduation. Furthermore, parental involvement measures were also statistically tied to the odds of four-year college plans. Interestingly, different proxies for parental involvement produced very different effects on postsecondary plans.

Frequent parent-child communication and parental encouragement were associated with an increase in the odds of planning to enroll in a four-year college; however, greater levels of parental control over the student's behavior and regular auditing of the child's homework were associated with a *decrease* in the odds of aspiring to four-year college enrollment. Broadly speaking, these findings suggested that social capital did influence postsecondary plans, even after controlling for race, ethnicity, and other commonly used background variables.

The focus of Emeka and Hirschmann's (2006) study was to identify what types of students had applied for the WSA scholarship and what types of students had ultimately received the award. Findings from the multivariate regression analyses were particularly interesting. Emeka and Hirschmann (2006) found that among all students, being Vietnamese, receiving high levels of parental encouragement, engaging in frequent contact with school counselors, experiencing high academic achievement, and enjoying high levels of popularity all were associated with increases in the odds of applying for the WSA scholarship. On the other hand, being white, residing in an two-parent home, having highly educated fathers, and receiving greater levels of parental supervision were associated with decreases in the odds of applying. The authors surmised that these 'negative' relationships were directly related to program eligibility requirements. For example, students in two-parent homes, with highly educated fathers were more likely to also have higher family incomes. Thus, these students were more likely to be above the income threshold and ineligible to apply.

The likelihood of receiving the award was also influenced by multiple factors. Among those who applied, having highly educated mothers, being a second generation

immigrant, devoting larger quantities of time to homework, engaging in regular contact with the guidance counselor, and earning high grade point averages were all associated with increases in the odds of receiving the WSA scholarship. Conversely, residing in an two-parent family, having highly educated fathers, and reporting higher levels of self-esteem were associated with decreased odds of receiving the award. One possible explanation for these results is that those traditionally considered the most disadvantaged were favored by the WSA scholarship committee. Those residing in single parent homes, those without college educated fathers, and those whose parents immigrated to the United States were more likely to receive the award.

In their 2006 study, St. John and Hu evaluated the impact of the Washington State Achievers program on postsecondary aspirations and postsecondary enrollment. Using data from the UW-BHS senior survey, St. John and Hu (2006) ran a series of logistic and multinomial logistic regressions. Among the models, six included the following relevant outcome variables and thereby informed this study: Whether the student aspired to attain a 4-year degree, whether the student expected to attain a 4-year degree, whether the student enrolled in any type of postsecondary education the fall after high school graduation, whether the student enrolled in a four-year college, whether the student enrolled in a private college, and whether the student enrolled in an in-state college.

In addition to explanatory variables that accounted for participation in the WSA program, St. John and Hu (2006) controlled for background and social origin (gender, ethnicity, parental education, and home language), social capital (family support and family structure), academic preparation (high school grades and AP coursetaking), and educational aspirations (included in the enrollment models only).

The results from the St. John and Hu (2006) study were clear: "These analyses indicate a substantial positive effect of the WSA program on preparation for college…as well as on enrollment behavior" (p. 261). Even after controlling for background, social capital, and academic achievement, receipt of the WSA scholarship was associated with increased odds of enrollment in postsecondary education. Specifically, receiving the WSA scholarship was related to improved odds of enrolling in four-year, in state, and private colleges.

Findings from these three studies, all of which used data from the UW-BHS senior survey, provide important key insights into the students being studied and their postsecondary choices. Hirschmann, Lee, and Emeka (2003) suggested that among participating students, social capital influenced college plans. Emeka and Hirschmann (2006) reported that the WSA scholarship targeted those traditionally considered the most disadvantaged. Notwithstanding the target population, St. John and Hu (2006) proposed that the Washington State Achievers program improved college access for scholarship recipients.

Evaluating the Washington State Achievers Program

In its conception and implementation, the Washington State Achievers (WSA) program draws directly from the postsecondary models previously reviewed. The status attainment model assumes a positive association between one's socioeconomic and family background and one's educational and occupational attainment. This implies that students from disadvantaged backgrounds are less likely to attain high status levels of education or employment, compared to their peers with college educated parents and

higher levels of family income. To improve postsecondary equity, therefore, the WSA program directly targets those students traditionally disadvantaged.

From the balanced access model, we come to understand the complimentary interaction and influence of academic preparation and financial need on postsecondary access. The dual objective of the WSA program is first, to improve academic preparation through school reform and second, to mitigate the effects of financial need through guaranteed aid.

Hossler and Gallagher's (1987) college choice model identifies three sequential stages, which comprise the choice process: pre-disposition, search, and choice. The authors suggest that by the junior year, students become active college information consumers; at this time, teachers, counselors, and peers play important roles in the dissemination of information. As a result, Hossler and Gallagher encourage the following for intervention programs: development of student support mechanisms, group mentoring, opportunities for campus visits, and financial aid. Clearly, the timing of the WSA program (application process during the junior year of high school) and the services offered as part of the program are compatible with Hossler and Gallagher's suggestions.

The student-choice construct describes the sequential and situated nature of postsecondary choice. Similarly, the WSA program requires students to complete college preparatory high school curriculum, take the SAT, apply to postsecondary institutions, apply for federal financial aid, and to enroll in college the fall after high school graduation (a sequential path to college). Furthermore, the pairing of students and mentors provides for individualized guidance on the path.

This study will evaluate the impact of the WSA program on college enrollment. Specifically, this study seeks to evaluate the influence a guaranteed funding program had on the enrollment decisions of those traditionally underrepresented. I specified a number of multinomial logit models and compared groups of students in an effort to address the issue of selection bias.

In many respects, this study constitutes a blend of previously specified models. Like St. John and Hu's (2006) study, this analysis utilizes multivariate methods and UW-BHS senior survey data to evaluate the impact of the WSA program. The current study also draws from the work of Hirschmann and colleagues (Emeka & Hirschmann, 2006; Hirschmann, et al., 2003) specifically in the utilization of social capital theory as a framework for interpretation. It is my hope that this current study will provide additional clarity to our understanding of the impact of the WSA program.

The dependent variable for this study contained five possible outcomes, each related to the student's postsecondary enrollment decision made the fall immediately following high school graduation; values for the dependent variable included: no postsecondary education, enrollment in two-year in-state colleges, enrollment in four-year public in-state universities, enrollment in four-year in-state private universities, and enrollment in out-of-state institutions.

Five categories of independent variables comprised the explanatory component of the model. These five groupings, and the variables within them, are consistent with traditional postsecondary modeling and the tenets of human and social capital theory. The five explanatory categories included background and social origin, parental involvement, social networks, academic preparation, and WSA program variables.

As detailed previously, race/ethnicity, gender, parental education, home ownership, two-parent homes, and sibship size have been statistically significant predictors of postsecondary choices. These indicators effectively comprise a student's background and social origin. Many of these measures are directly tied to human capital theory and/or the status attainment model and all are common controls for modeling postsecondary behavior.

To control for students' race and ethnicity, dichotomous variables identifying African Americans, Hispanics, East Asians, Other Asians, and Native Americans were created. These variables followed the one or zero coding scheme, common to dichotomous variables. Similarly, the 'female' variable assigned a value of one to females and zero to males.

Mother's education served as the measure for parent education. Years of education were reported continuously with a minimum of 11 for those without a high school degree and maximum of 20 for those with a doctorate degree. The home ownership variable was also coded dichotomously with a value of one for those in owner occupied homes, otherwise zero. Students living with both of their parents were assigned a value of one for the 'two-parent family' variable, otherwise they were assigned a value of zero. The final background and social origin measure was a truncated continuous variable for number of siblings, with a minimum value of zero and a maximum value of eight (students with more than eight siblings were assigned the value of eight).

Parental involvement measures included in this analysis include the frequency with which students discussed school events with their parents, the degree to which students believed they could have in depth conversations with their parents, the degree to

which students believed they could go to their parents for advice, and the degree to which students believed their parents had always expected them to go to college. These proxies for parental involvement are consistent with social capital concepts.

All parental involvement measures were coded dichotomously. The discuss school and check homework variables assigned a value of one if the student reported that these events occurred 'often,' otherwise they were assigned the value of zero. Similarly, the in-depth conversations, go to parents for advice, and family expectations variables assigned a value of one if the student reported that they 'strongly agreed' that this type of parent-child relationship existed, otherwise the value of zero was assigned.

Another aspect of social capital is the social networks within which students make choices. Five variables were included as measures of social networks: one variable measured how strongly the student agreed that his/her parents knew the parents of his/her friends; three variables measured the educational choices of the students' peers; and, the final social network variable measured the degree of educational communication between a student and his/her high school guidance counselor.

With the exception of the high school counselor variable, all social network variables were coded dichotomously. Students who 'strongly agreed' that their parents knew the parents of their friends were assigned a value of one for the closed network variable, otherwise zero. Students who reported that half or more of their peers had dropped out of high school, that more than half of their peers had taken a college entrance exam, or that more than half of their peers planned to attend a four-year college were assigned values of one for the variables respectively, otherwise zero. Finally, the number of postsecondary related meetings between a student and his/her guidance counselor were

summed, thereby creating a continuous variable with a minimum of zero and maximum of fifteen.

In the tradition of human capital theory and the balanced access model, I have also included two variables to represent academic preparation: a variable indicating whether a student had taken an advanced placement or honors course and a variable indicating the student's high school grades, as self reported. Students who had taken an honors course were assigned the value of one, otherwise zero; and student grades were reported as a grade point average (4.0 scale) with a minimum of 0.50 and maximum of 4.0.

Finally, the model included a variable measuring receipt of a WSA scholarship; students awarded the scholarship were assigned a value of one, all others a value of zero. This measure was included to explore whether the WSA program had an effect on postsecondary choices, net of other commonly accepted predictors.

Chapter Three
Data and Methodology

An Overview of the Data

In the spring of 2002, Charles Hirschman, Professor of Sociology at the University of Washington, and colleagues conducted a survey (UW-BHS) of high school seniors enrolled in five comprehensive and urban high schools; a similar survey had also been conducted in the year 2000 (Hirschman, Lee, & Emeka, 2003). Each of the high schools was located in Washington state, fell within the same public school district, and comprised the same metropolitan area.

While not initially designed to evaluate the impact of the Washington State Achievers Program, the data collected from these surveys provide substantial information on WSA participants. The Hirschman surveys were conducted at three participating WSA high-schools and two non-participating high-schools, making the data amenable to a WSA impact study.

The original objective of the survey was to analyze the effects of race and ethnicity on educational ambitions, given other psychological, sociological, economic, and academic measures (Hirschman, et al., 2003). Fortunately, respondents in the WSA schools were also asked if they had applied for and received a WSA award. Equally as fortuitous for the current study, Hirschman and colleagues telephoned the 2002 respondents in the fall of 2002, to determine if and where the student was enrolled in postsecondary education.

Each of the participating public high schools resides in an urban area and attracts a relatively high percentage of students from low socioeconomic backgrounds and a high number of minority students. While students across the five schools were comparable in

many ways, it should be noted that seniors in the non-WSA high schools were found to have slightly higher socioeconomic backgrounds compared to students at the WSA schools (Emeka & Hirschman, 2006).

The "paper and pencil" surveys were intended for each senior at the participating high schools and in fact the overall response rate was about 80% (Hirshman, et al., 2003). However, not all the surveys were completed at the participating schools on the days the surveys were administered. Mailings were sent to students absent on the survey day and absentee responses increased the overall sample size by about 15%. Very few students chose not to answer the survey questions. Less than two percent of enrolled seniors (or their parents) refused participation in the study.

The response rate was calculated by considering graduating seniors who were enrolled at one of the five comprehensive high schools. Including a broader spectrum of potential seniors would have lowered the response rate to just under 70% (Hirschman, et al., 2003).

The existence of multiple response rates can be attributed to the challenges associated with identifying high school seniors. The first challenge was in locating students registered but not regularly attending the school. Additionally, locating students affiliated with the school but not necessarily attending the school posed another challenge. Roughly ten percent of seniors in the surveyed school district were not enrolled in one of the five comprehensive high schools. Some of these students were home-schooled, some participated in alternative programs, and some were enrolled in high school equivalency courses at the local community college (Hirschman, et al.,

2003). Students not enrolled and attending one of the participating high schools did not participate in the study.

Other challenges surfaced due to school record keeping practices. Some students who self-identified as seniors, and planned to graduate that spring, were classified as 'juniors' on the school records. The identification of seniors was further convoluted by the presence of fifth-year seniors who were often enrolled minimally to fulfill final graduation requirements (Hirschman, et al., 2003). Notwithstanding the variety of impediments to identifying the senior population, the overall response rate and low refusal rate suggest an appropriate sample for evaluating college going behavior in an urban context.

One additional point merits mention: the timing of the 2002 survey occurred before the adoption of substantive school reforms in the WSA schools. Clearly, the cultures at each of the five high schools may have uniquely influenced the college going behavior of their students; but, any environmental influence on student behavior, identifiable from the survey results, was not the direct result of WSA motivated reform. As a result, the scope of this dissertation is limited solely to the evaluation of guaranteed student aid and mentoring-support services and their impact on postsecondary enrollment.

The Respondents

A more thorough statistical analysis of the students, including an analysis of their similarities and differences will be provided in Chapter Four, however, an overview of general respondent characteristics is provided now. Table 3.1 details the traits and

characteristics of the students and their families across each of the independent variables

(the variables themselves will be explained later in this chapter).

Table 3.1 Descriptive Statistics. N=1097.

Variable	Count	Mean	St. Dev.	Min	Max	Description
Black	1097	0.170	0.375	0	1	1=African American
Hispanic	1097	0.098	0.297	0	1	1=Hispanic
East Asian	1097	0.069	0.254	0	1	1=East Asian
Other Asian	1097	0.110	0.313	0	1	1=Phillipino, Cambodian, Other Asian
Native Am.	1097	0.046	0.209	0	1	1=Native American, Hawaiian, P.I.
Female	1097	0.559	0.497	0	1	1=Female
Mother's Educ.	1027	13.449	2.141	11	20	Years of mother's education
Home Owner	1083	0.670	0.470	0	1	1=Family owns home
Two-parent	1069	0.566	0.496	0	1	1=Live with mother and father
Sibship Size	1058	2.806	2.000	0	8	Number of siblings
Discuss School	1097	0.347	0.476	0	1	1=Parents often discuss school events
In-depth Conv.	1077	0.163	0.369	0	1	1=SA have indepth conv. w/ parents
Parental Advice	1084	0.346	0.476	0	1	1=SA can go to parents for advice
Family Expec.	1097	0.480	0.499	0	1	1=SA family has always expected PSE
Closed Network	1086	0.123	0.329	0	1	1=SA parents know parents of friends
Peers Dropout	1092	0.119	0.324	0	1	1= >= half of peers dropped out
Peers SAT/ACT	1089	0.484	0.499	0	1	1= > than half of peers have taken exam
Peers Asp.	1089	0.340	0.474	0	1	1= > than half of peers have 4yr. asp's
Counselor	1055	5.823	3.902	0	15	Frequency of interaction with counselor
AP/Honors	1078	0.461	0.499	0	1	1=Taken AP or Honors course
HS Grades	1090	3.147	0.718	0.50	4.00	High school gpa (self reported)
WSA – Apply	1097	0.150	0.357	0	1	1=Applied for WSA scholarship
WSA – Receive	1097	0.126	0.332	0	1	1=Received WSA scholarship

The students participating in the Hirschman study were a racially and ethnically

diverse group. As highlighted in Table 3.1, only half of the respondents identified

themselves as 'White.' Sizable populations of African American, Hispanic, Asian, and

Native American students comprised the student bodies at these five urban high schools.

In terms of socioeconomic background, more than half of the students' mothers

had at least some collegiate experience though the average mother had completed less

than two years of college. A majority of the respondents (two-thirds) lived in owner-occupied housing, while only one-third lived in rental housing.

Family composition and measures of parental involvement were also diverse. Just over half of the students still reported living with their mother and father and on average they had just under three siblings; but, number of siblings varied greatly. While nearly half of the respondents said their family had always expected them to go to college, only one-third felt they could go to their parents for advice.

Lastly, these students appeared on the whole to be academically prepared for college. Nearly half of the students had taken at least one honors or A.P. course during their high school curriculum and the average grade point average for all students was 3.15 (on a 4 point scale). Furthermore, approximately half of the students interacted in peer groups in which a majority of the students had already taken a college entrance exam.

An Overview of the Model

While a statistical evaluation of the WSA program requires the use of multiple statistical tools, the statistical protocol for this study is generally straightforward: Multinomial logit models will be specified and the overall analysis will consist of four phases. Before detailing the four phases, I will briefly review the characteristics of a multinomial logit model.

As the name suggests, multinomial logit models are appropriate when the outcome variable is nominal (non-ordered) and when multiple values for the outcome variable are possible (Long, 1997). Ultimately, the specification of a multinomial logit model is like that of a traditional logit model, with the difference between the two models

related to the outcome variable. Traditional logit models have binary outcome measures; for example, an individual is either enrolled in a postsecondary program or they are not.

Multinomial logit models, on the other hand, allow multiple outcome values; for example, an individual may be enrolled in a four-year university, a two-year college, or not enrolled in postsecondary education at all. With a modeling structure that allows for multiple, nominal outcomes, multinomial logit models estimate the probability, or the odds of achieving one outcome compared to another.

To address the question of college choice, a multinomial logit model is an appropriate statistical method. Not only does postsecondary educational behavior consist of multiple paths, but the outcome itself is inherently nominal. It is nonsensical to think that the choice between an out-of-state institution and an in-state institution, or a public school and a private school, can be evaluated by some meaningful hierarchy.

The multinomial logit model is the central piece of this study. Four phases of analysis comprised the evaluation of the Washington State Achievers program. Each phase informed the next with the collective objective being to better understand the impact of the WSA program.

Phase One. The first phase described the traits of students and their parents and compared aggregated data from each school. This phase of analysis had two purposes: first was to determine, from a statistical perspective, what the students were like, including ethnic and family composition, access to social capital, and academic achievement. The second purpose was to compare students by individual schools and by WSA designation. Since my ultimate goal was to evaluate the WSA program, it was

critical to first understand how students in the WSA schools differed from each other and from students in neighboring, non-WSA schools.

Phase Two. As described in Chapter Two, five categories of explanatory variables were included in the multinomial logit model: family background and social origin, parental involvement, social networks, academic preparation, and WSA program.

For the second analysis phase, all of these variable categories were included in the multinomial logit model, except for the WSA program variables. A full sample model and two divided sample models (based on the high school's WSA participation) were run. Dividing the sample of respondents by WSA participation allowed me to determine whether the independent variables had similar or contrasting effects on college choice, given the type of high school in which one was enrolled. This was important to understanding differences between WSA and non-WSA schools and to understanding how WSA students might behave in the absence of a guaranteed funding program. Limited sample size precluded my ability to run the model by each individual school.

Phase Three. While it was important to understand the similarities and differences between WSA and non-WSA schools, it was equally critical to understand potential differences between students in the WSA schools. Part of unveiling the impact of the WSA program was finding students who were similar in meaningful ways, yet different in their receipt of guaranteed aid.

Phase Three examined the similarities and differences among students in the WSA schools. Presumably, these students should have shared more commonalities with one another than with students from the non-WSA schools. Phase Three consisted of the same multinomial logit model as described previously, except the WSA scholarship

variable was included and the sample was limited to only those within a WSA school. In effect, Phase Three evaluated the impact of receiving guaranteed aid, net of other influential factors.

Phase Four. The final analysis phase examined the effect of the guaranteed funding component in greater complexity. The WSA scholarship variable was interacted with the other independent variables. Interaction terms explored the possibility that the effect of a WSA scholarship varied among different types of students with different characteristics. Together, the four phases of analysis evaluated the impact of the WSA scholarship on college choice and postsecondary behavior.

An Overview of the Variables

In total, 22 independent variables were included in the model to explain the effect of a guaranteed aid intervention program on postsecondary access and college choice. According to the precepts of human and social capital and the four empirical models discussed in Chapter Two, these 22 variables were grouped into five major categories: background and social origin, parental involvement, social networks, academic preparation, and WSA program. The outcome and explanatory variables are described below and summarized in Table 3.1.

Outcome Variable. The outcome variable was comprised of five distinct educational outcomes, obtained from the follow-up survey conducted the fall after high-school graduation. Based on postsecondary enrollment status, respondents were classified as 'no postsecondary enrollment,' 'two-year in-state enrollment,' 'four-year in-state public enrollment,' 'four-year in-state private enrollment,' and 'out-of-state enrollment.'

Table 3.2 breaks down the frequency with which students were divided into the

respective outcomes.

Table 3.2 Frequency of enrollment decisions.

Enrollment outcome	% of sample
No postsecondary	36%
2-year in-state	32%
4-year in-state public	16%
4-year in-state private	5%
out-of-state institution	11%

Background and Social Origin. The background variable group contains

traditional race and gender variables as well as measures for socioeconomic status and

family structure. Five race/ethnicity dummy variables controlled for African American,

Hispanic, East Asian, Other Asian, and Native American ethnicity.

In accordance with recent census practice, students were permitted to identify

with multiple racial and ethnic groups. While most students identified with only one

racial or ethnic group, approximately 15% identified with multiple groups and

approximately 5% refused to answer the race and ethnic related questions (Hirschman, et

al., 2003).

Hirschman and colleagues (2003) constructed a hierarchy for coding those with

mixed ancestry. Students who responded positively to the question about Hispanic

identity were coded as 'Hispanic' regardless of other reported ancestry. Furthermore,

non-Hispanic African Americans with mixed ancestry were coded as African Americans;

about one-third of the non-Hispanic Black respondents identified with multiple

racial/ethnic groups. Lastly, students who refused to answer the racial and ethnic identity

questions were assigned the ethnicity as reported in their school administrative records.

While the 'female' dummy variable to control for gender needs no explanation, the proxies for socioeconomic status warrant a brief summary. Data on each student's family income was not collected in the survey, however, respondents did answer questions about parent educational attainment and home ownership. Since these latter measures are also associated with socioeconomic standing, continuous variables for mother's years of education and a dummy variable for home ownership replaced the commonly used socioeconomic pairing of family income and parent education.

As was stated in Chapter Two, mother's education has been shown to be a better predictor of educational attainment than father's education. Additionally, many of the students surveyed lived in single parent homes, making the use of mother's education a logical choice (St. John, 1991). Other findings from the survey supported the notion of including only mother's education: over 42% of the students reported they did not live with both their mother and their father and 35% of the students cited someone other than their biological father as most like a father to them.

Mother's education was coded as a continuous variable for years of education; less than a high school degree was assigned the value of '11,' a high school degree '12,' some college '13,' an Associates Degree '14,' a Baccalaureate degree '16,' a Master's degree '18,' and a doctorate degree '20.'

Students were asked to report the education level for the person who was 'most like a mother' to them. Just over 85% of the respondents identified their biological mother as the person 'most like a mother.' Since the importance here is the student's perception of motherly influence, the felt and perceived relationship was of greater importance than the 'legal' relationship; thus, no adjustments were made for student

responses which cited women other than biological mothers as most like a mother. Finally, the two percent of students who said no one was like a mother to them were assigned the mean value for mother's education given their school and race/ethnicity.

One's family structure directly impacts the availability of social capital. Accordingly, variables for two-parent homes and the respondents' total number of siblings were included. Living with both mother and father was coded as a dummy variable while number of siblings was coded as a continuous variable. I constrained the upper limit of 'number of siblings' to 'eight or more;' about 3% of the responses recorded total counts above eight.

Parental Involvement. The student survey asked the students to indicate how frequently they engaged in educational discussions with their parents. Students responded to the question on a four-point scale from 'never' to 'often.' Their responses were recoded into a dummy variable and assigned a value of one for 'often,' otherwise 'zero.'

In some respects, traditional measures of parental involvement, like the one just discussed, are crude proxies. The frequency with which parents and children communicate may or may not provide meaning and academic motivation to a child. However, such parent-child interaction is still generally considered to be representational of social capital investments, thus the previous measure was included in the model.

In an effort to compensate for the limitations of traditional involvement measures, I also included variables that attempted to address the quality of parent-child interaction and the overall closeness of the parent-child relationship. Students were asked to indicate on a four-point scale how strongly they agreed or disagreed that they frequently had in depth conversations with their parents and that they felt comfortable going to their

parents for advice. I then recoded the responses as dummy variables with a value of one when the student said they 'strongly agreed' that they had frequent in depth conversations with their parents and that they felt comfortable going to their parents for advice and zero for all other responses.

To represent the influence of significant others' expectations, I included a variable that identified the students' perception that their family had "always expected (them) to go to college." Students indicated their level of agreement on a four-point scale between strongly agree and strongly disagree. I recoded the responses into a dummy variable that took on the value of 'one' when students responded with strongly agree, otherwise, the variable took on the value of 'zero.'

For the purposes of this study, it would be ideal to know to what type of postsecondary institution parents hoped their child would attend. The survey did ask students to indicate how far in school their mother and father wanted them to go; but, using those responses was problematic. First, a significant number of students (17% regarding fathers and 10% regarding mothers) either didn't know what their parents' educational desires were or indicated that the question did not apply to them since they did not have a parent or guardian that held the role of mother or father. Additionally, there is potential for inconsistency in how the students interpreted the question. For example, should students respond based on biological parents, step-parents, or father/ mother figures?

Social Networks. Like the family structure and parental involvement measures, social network mechanisms act as proxies for social capital. Variables that identified the existence of social networks within the parental, peer, and school domains were added.

Coleman (1988) suggests that closed social networks are critical to the development and accessibility of social capital. A widely used example of closed networks in educational studies investigates the relationship between a student's parents and the parents of the student's friends.

Because it is difficult in survey form to get at the nature or quality of these inter-parental relationships, many surveys ask students if their parents know the parents of their friends. Obviously, the assumption is that knowing other parents is highly correlated to actually having a relationship with them. Students in the Hirschman survey were asked to indicate how strongly they agreed or disagreed, on a four-point scale, that their parents knew the parents of their friends. I then created a dummy variable and assigned the value of one when the student responded that they strongly agreed that their parents knew the parents of their friends; all other responses were coded zero.

Peer networks also influence social capital; therefore, three dummy variables to measure the behavior of the student's peer network were created. The first of these variables assigned a value of one if half or more of a student's friends had dropped out of high school. Similar variables were created and assigned a value of one when more than half of a student's friends had or planned to take the SAT or ACT and when more than half of one's friends planned to attend a 4-year postsecondary institution.

School itself can be another repository of social capital, depending on the social networks taken up. A student's relationships with educational providers can be critical to postsecondary plans and can constitute important social networks. To represent the potential school networks which the student may have taken up, a variable was created to measure the types and frequency of interaction between the student and their high school

counselor. Students were asked to indicate the number of times during the previous 12 months when they discussed various educational and occupational issues with their school counselor. Possible responses were 'never,' 'once,' 'twice,' or 'three or more,' to which I assigned values of zero to three, respectively.

Five topics related to student-counselor discussions were of particular interest, therefore, I compiled the five responses into one variable to create a student-counselor relationship index. Scores for the index ranged from zero to a possible fifteen. Included in the index were the number of times during the previous year a student and his/her counselor discussed high school coursework, educational plans, career plans, choosing a college, and financial aid.

Academic Preparation. Clearly, one's academic history impacts the set of potential postsecondary options one enjoys upon completion of high school; therefore, the variables included in the academic preparation group aimed to control for the influence of preparation and achievement. High school grades and participation in honors curriculum can be considered outcome variables in their own right. They are included as explanatory variables in this study because of their potential to explain how high school achievement influences postsecondary choices.

A dichotomous variable assigned the value of one to those students who had completed at least one Advanced Placement (AP) course, all other students were assigned the value of zero. Finally, I included a continuous variable for a student's self-reported high-school grades; the values ranged from 0.5 to 4.0. Students were asked to report their grades as 'mostly A's,' 'half A's and half B's,' 'mostly B's,' etc. I recoded the responses into their 4.0 scale equivalents. Obviously, the conversion does not represent a perfect

transformation in each case (for example, not all students reporting 'mostly A's,' will actually have a 4.0 grade point average); however, the degree of error in the transformation is presumably minimal and relatively inconsequential to the analysis.

Program Variables. Inasmuch as the ultimate objective of this analysis was to evaluate the impact of the Washington State Achievers scholarship on postsecondary choice, the final phases of analysis included a dummy variable for receipt of the scholarship. A few final points about the program variable are in order: while students were asked on the survey to self-report their participation with the WSA program, actual WSA application and acceptance data from the Washington Education Foundation was used rather than the students' self-reports. Lastly, because the sample was divided by school and school type, it was unnecessary to have a dichotomous variable that identified the student as enrolled in a WSA participating high-school.

Correlation between the Variables. In order to evaluate the degree to which each of the independent variables was indeed independent, Pearson correlation coefficients were determined by comparing each of the variables to one another (see Table 3.3 for full results from the analysis). None of the 231 variable comparisons produced correlation coefficients higher than .5 and 60% of the comparisons held correlation coefficients lower than .1. The independent variables chosen for this study demonstrated low levels of correlation, thereby diminishing the potential for problems of colinearity in subsequent stages of the analysis.

Table 3.3 Pearson Correlation Coefficients, N=1097

	Black	His-panic	East Asian	Other Asian	Native Am.	Female	Mother Ed.	Own Home	Two-parent	Sibsize	Discuss Sch.	Indepth	Advice	Expect.	Closed Net.	Peer Drop.	Peer Exam	Peer Asp.	Coun-selor	Honors	GPA	Ach'vr
Black	1																					
Hispanic	-.15	1																				
East Asian	-.12	-.09	1																			
Oth Asian	-.16	-.12	-.1	1																		
Nat. Am.	-.1	-.07	-.06	-.08	1																	
Female	-.01	.04	0	-.08	-.01	1																
Mom Ed.	-.01	-.04	-.02	-.22	-.06	-.04	1															
Home	-.24	.02	.04	-.14	-.04	-.03	.22	1														
Two-parent	-.26	-.03	.07	.12	0	-.07	.05	.24	1													
Siblings	-.11	.03	-.08	.11	.1	.05	-.18	-.21	-.16	1												
Disc. Sch.	-.02	-.01	-.02	-.12	.06	.13	.16	.08	.1	-.06	1											
Indepth	-.07	-.02	.02	-.07	-.02	.13	.02	-.01	-.03	-.03	.25	1										
Advice	.04	.02	-.01	-.13	-.02	.07	.08	.05	.01	-.01	.27	.47	1									
Expect	-.02	.01	.08	.07	-.05	.06	.16	.06	.07	-.08	.13	.09	.15	1								
Closed Nt.	0	.02	.04	-.04	-.02	.02	-.02	.04	.05	.02	.17	.2	.23	.11	1							
Peer Drop.	-.07	.02	-.03	-.01	.08	-.04	-.12	-.1	0	.11	-.05	-.01	.01	-.08	-.03	1						
Peer Exam	-.15	-.03	.09	0	-.06	.1	.17	.18	.15	-.13	.18	.03	.02	.18	.02	-.22	1					
Peer Asp.	-.06	-.04	.09	.01	-.07	.06	.2	.18	.11	-.14	.19	.07	.07	.14	.02	-.19	.48	1				
Counselor	-.15	0	.02	.04	.03	.09	-.08	-.13	-.09	.08	.1	.08	.06	.13	.13	-.01	.01	0	1			
Honors	-.12	-.07	.05	-.02	-.04	.11	.18	.13	.12	-.12	.15	.03	.02	.19	-.01	-.11	.36	.32	.03	1		
GPA	-.11	-.06	.02	-.01	-.02	.23	.2	.09	.11	-.11	.18	.11	.14	.21	0	-.19	.32	.28	.07	.42	1	
Achiever	-.09	-.01	.05	.1	0	.1	-.12	-.15	-.13	.1	0	.03	-.01	.09	.03	-.05	.01	0	.27	.09	.11	1

Note: Coefficient italicized when p ≤ .05

Addressing Sample Selection and Omitted Variable Bias

Virtually all program evaluations face statistical challenges associated with sample selection and omitted variables. If not properly addressed, bias can inflate or deflate estimates, thereby delegitimizing the analysis. This study is no different. Students who participated in the WSA program were students who were inclined toward program participation; in other words, they self-selected into the program. Self-selection violates a fundamental experimental design assumption. Traditional experimental designs, aimed at evaluating the effect of a specific program, assume *randomized* assignment into the specified program. As will be highlighted below, omitted variable bias regularly accompanies sample selection bias.

Because social programs, in reality, very rarely employ random assignment, various statistical techniques have become popularized as remedies for addressing the issues surrounding sample selection and omitted variables. Three of the most amenable to studies of postsecondary education include the Heckman adjustment (Heckman, 1979), regression discontinuity (Kane, 2003; van der Klauuw, 2002), and matched groups (Dale & Krueger, 2002) approaches.

The Heckman coefficient approach attempts to adjust for bias in the model estimates which result from issues of self selection (Heckman, 1979). Biased estimates cause analysts to inappropriately overvalue or devalue a program's effect. For this study, I am interested in the effect of WSA participation on college choice. In simple terms, the central question of the study can be modeled with three types of explanatory variables:

College Choice = Background/Control Variables + WSA participation + Unobservables

Since participation in the WSA program is not randomly assigned, it is probable that WSA participation and the unobservable variables (by unobservables, I simply mean the 'error term') are correlated. This correlation will lead to bias in the estimates for WSA participation.

Assume the only unobservable characteristic that influences college choice is postsecondary motivation. Postsecondary motivation, however, also predicts (to a large degree) participation in the WSA program. The result is that the unobservable (motivation) is not wholly independent from WSA participation, though it needs to be to satisfy the rules of regression (the error term is assumed to be independent and normally distributed). This is not, however, the only potential problem. We must also assume that one's college plans influence participation in the WSA program. Thus, the outcome variable (college choice) is endogenous to the explanatory variable (WSA participation).

If the model were not adjusted, the WSA effect would likely be biased upward because the effect of both WSA participation *and* postsecondary motivation would be included in the WSA estimate. This type of bias would lead observers to believe the influence of the WSA program was greater than it really might be. While three forms of bias are present with this model (sample selection, omitted variable, and endogeneity), I will refer to the potential bias simply as selection bias.

The Heckman adjustment seeks to adjust for this potential bias by reestablishing independence between the WSA and unobservable variables. In theory, the Heckman adjustment uses a unique set of explanatory variables to predict participation in the WSA program. These variables must also be unrelated to the original outcome variable (college choice). If a set of variables predicting WSA participation but not college choice were

identified, the estimate for WSA participation could be adjusted. In essence, the Heckman coefficient would adjust the WSA estimate downward by substituting the WSA program variable with the set of predictor variables, thereby limiting the effect of postsecondary motivation to the unobservables only.

To employ this technique, one would need a set of variables that predict WSA participation, but not college choice. Unfortunately, the dataset used in this study does not contain variables that fit the required description. Because a lack of appropriate data often limits the use of the Heckman adjustment in educational studies, the other two selection bias remedies take a different approach to addressing bias. Both approaches attempt to identify and compare students who are similar to each other.

In his indictment of college-going studies published by the National Center for Educational Statistics (NCES), Becker (2004) urged postsecondary scholars to use a regression discontinuity approach when analyzing college access. The premise behind the regression discontinuity approach is straightforward and it has been used effectively in postsecondary research (Kane, 2003; van der Klauuw, 2002). Like the Heckman coefficient, regression discontinuity seeks to address potential selection bias; unlike the Heckman coefficient, regression discontinuity adjusts the sample, not the estimates.

Eligibility for participation in a social program is often determined by specific selection criteria. In the case of the WSA program, applicants must be enrolled in a WSA participating high school, low-income, and motivated to earn a four-year degree immediately after high school. The regression discontinuity approach suggests college motivated students just above the income threshold (WSA ineligible) are likely similar to college motivated students just below the income threshold (WSA eligible).

Grouping students, therefore, immediately on either side of the income threshold solves the potential problem of self selection (as well as endogeneity and omitted variable) bias. If we know students have similar incomes and postsecondary motivation, we can assume they are similar in other traits for which the model can't control. An additional assumption is that students above the threshold would have self selected into the WSA program at similar rates to those below the threshold had they been eligible.

To conduct the regression discontinuity approach, one needs data for the program criteria, in our case income and postsecondary aspirations. While the dataset used in this study contains aspirations' data it does not contain family income information. Knowing selection criteria data is not always available, Dale and Krueger (2002) developed an additional way of grouping students to purge the model of selection bias.

The Dale and Krueger (2002) matched groups approach is viable when one is concerned about omitted variables and self selection. Like van der Klauuw (2002) and Kane (2003), Dale and Krueger identified similar students who received different treatments. The Dale and Krueger approach was unique, however, in how they determined likeness between students.

Dale and Krueger created similar groups of students based on the treatment decision rule itself (as opposed to the treatment criteria). Specifically, they grouped students who had similar patterns of admission's decisions to postsecondary institutions. Students who were accepted, for instance, to Harvard, Indiana University and Butler University (or institutions like those) would form a group while students accepted to Indiana State University, Butler University and Ball State University would form a

separate group. Regardless of where a student ultimately enrolled, the selection decision

rule (whether a student was admitted) served as the basis for grouping students.

The regression discontinuity approach requires data on the treatment selection

criteria. Dale & Krueger's matched groups approach is useful when unobservable or

latent characteristics also influence treatment selection. While full data on the selection

criteria is not required, the matched group approach does require multiple patterns of

treatment selection (multiple matched groups). The study reported here has only one

treatment decision - the student either applied to WSA and was accepted or applied to

WSA and was rejected (one could also create a group for those who didn't apply at all).

Multiple matched groups are a prerequisite for this approach, because Dale and

Krueger (2002) suggest specifying dummy variables for each of the matched groups.

When a number of matched groups exist, the set of dummy variables replicate a proxy for

the unobservable variables. In the case of this study, specifying a dummy variable for

receipt of the WSA scholarship is consistent with previous postsecondary research

(including St. John and Hu's (2006) study on the WSA program); but, one dummy

variable for one matched group doesn't truly replicate the Dale & Krueger approach.

Notwithstanding the constraints this study faced in employing the Heckman

coefficient, regression discontinuity, or matched groups adjustments, there is reason to

believe the degree of selection and omitted variable bias in this study is limited. For one

thing, the survey was conducted during the participants' senior year, therefore,

participants represented educationally dedicated high school students; those who had

previously dropped-out of high school were not included in the sample. Additionally, the

multinomial logit models were run on both the full and divided samples. By dividing the

sample, I was able to analyze like groups of students, thus reducing the magnitude of omitted variable bias.

Additional Limitations to the Study

In addition to the challenges posed by sample selection and endogeneity issues, this analysis was limited by a lack of family income data and the timing of the data collection. The positive association between one's socioeconomic status and postsecondary opportunity has been well documented (Advisory Committee on Student Financial Assistance, 2002; Paulsen & St. John, 2002; Smith, et. al., 1995). Generally speaking, the low-income do not enroll in college, particularly four-year institutions, at the same rates as their wealthier peers. Given the overwhelming evidence in this regard, the model proposed in this study would benefit from the inclusion of a family income measure.

In social science research, socioeconomic status is widely considered a function of family income and parental education. The fact the model proposed here contains variables for mother's education and home ownership (a proxy for income) indicates that socioeconomic status in fact is controlled. Claims arising from this analysis, therefore, are appropriately based on previous postsecondary research and include important socioeconomic controls.

The timing of the survey presents another limitation to the analysis, primarily as it relates to the study of aspirations. Students in participating WSA high schools applied for the WSA scholarship during the Fall of their junior year; however, the survey was conducted during the Spring of the student's senior year. Since the survey occurred after the scholarship competition, reported aspirations may or may not be independent of the

WSA program variables. For example, a student receiving the scholarship may expect, or aspire, to attain a four-year degree, knowing they are guaranteed a sizable scholarship. But, there is no way of knowing what the student's expectations or aspirations were prior to receipt of the award. While aspirations obviously affect college choice (see Hossler, et. al., 1999), it was unwise to include explicit controls for aspirations given the timing of survey administration, as described earlier.

The model proposed here, however, is not wholly without an aspirations or expectations control. One question on the senior survey asked students to rate their degree of agreement with the following statement: "My family has always expected me to go to college." Responses to this question framed the family's culture of postsecondary aspirations and expectations, independent of the WSA scholarship competition, thus it was included in the model.

The remainder of this paper will summarize the four phase analysis of the WSA program. It will also situate the analysis within the broader context of postsecondary research. Chapter Four will detail the findings from each phase of analysis and Chapter Five will highlight the critical findings and their impact on our understanding of postsecondary access and choice.

Chapter Four
Findings from the Data Analysis

The underlying objective of this study was to more fully understand how the

Washington State Achievers (WSA) program influenced college choice. The first phase

of analysis identified the characteristics of the student participants and the outcomes of

their postsecondary decisions. Multinomial logit models were specified for the final three

phases of the statistical analysis and their results are reported and interpreted herein.

Phase One: Comparing Student Characteristics

Because only high schools with significant low-income enrollment qualify to

participate in the WSA program, WSA eligibility guidelines suggested that students from

WSA schools would differ from those enrolled at non-WSA schools in characteristics

related to socioeconomic status. Phase One of the analysis primarily sought to understand

the respective student bodies, not only in terms of socioeconomic background, but also in

terms of academic achievement and family relationships. Subsequent phases of the

analysis analyzed students' postsecondary educational choices, controlling for individual,

family, socioeconomic, and school differences.

Sociologists and educational researchers have employed a variety of theoretical

perspectives to frame the effects of social class and social and cultural background on

educational achievement. Social class (Advisory Committee on Student Financial

Assistance, 2002), social capital (Perna & Titus, 2005), and cultural capital (McDonough,

1994; Tierney, 1999) provide different, but often overlapping, lenses through which to

observe and interpret issues of educational equity. At times, the line between the

theoretical concepts is imperceptibly thin and researchers ground studies on elements

common to each of the theoretical perspectives (Perna, 2000).

In this study, I also take a common ground approach. Elements of social class, social capital, and cultural capital are noticeable through the variables specified in the models. This approach is consistent with Hirschman, et al. (2003) and acknowledges that, "socioeconomic origins and other attributes of families of origin are key explanatory variables in all theoretical perspectives" (Hirschman, et al., 2003, 6).

Many of the student characteristics in both WSA and non-WSA schools were consistent with traditional urban demographics (see Table 4.1). While people of color comprise about 30% of the national population, people of color represent about 35% of the urban population (U.S. Census Bureau, 2000a). Within the three WSA schools, students of color were significantly overrepresented, accounting for more than half of the student body. The student bodies mirrored national urban demographics in terms of housing status as well. Nationally, about two-thirds of households live in owner-occupied homes, but the number reduces to about 60% in urban areas (U.S. Census Bureau, 2000b). Students at the three WSA schools all reported lower owner-occupied rates than the national average.

WSA and non-WSA schools shared some characteristics in common; these similarities were chiefly related to parental involvement. For example, parent and student discussions about school and the frequency of in depth conversations were statistically comparable regardless of WSA affiliation.

While students in WSA and non-WSA schools appeared similar in a few measures, the two groups of students were different in a number of meaningful

Table 4.1
A comparison of background, peer, and high school achievement means by WSA participation and school.
Data used with permission from UW-BHS, year 2002, N=1097.

	All	WSA	Non-WSA		School 1	School 2	School 3	School 4	School 5	
N	1097	568	529		244	146	178	272	257	
Black	0.17	0.22	0.11	***	0.20	0.18	0.29	0.14	0.08	***
Hispanic	0.10	0.12	0.08	*	0.09	0.14	0.13	0.09	0.06	***
East Asian	0.07	0.08	0.05	*	0.11	0.07	0.06	0.04	0.07	*
Other Asian	0.11	0.13	0.09	**	0.17	0.08	0.13	0.09	0.08	*
Native Amer.	0.05	0.04	0.05		0.03	0.05	0.06	0.04	0.05	**
Female	0.56	0.57	0.55		0.57	0.57	0.57	0.58	0.53	***
Mom's Educ.	13.42	13.00	13.90	***	13.34	12.86	12.63	13.65	14.12	***
Own Home	0.67	0.59	0.76	***	0.64	0.63	0.48	0.72	0.80	***
Two-Parent	0.56	0.53	0.60	*	0.61	0.50	0.44	0.60	0.60	***
# of siblings	2.81	3.06	2.54	***	2.79	3.12	3.38	2.50	2.59	**
Disc. School	0.35	0.34	0.36		0.36	0.36	0.28	0.30	0.42	
Indepth	0.16	0.17	0.16		0.19	0.18	0.14	0.17	0.14	
Advice	0.35	0.34	0.35		0.33	0.32	0.37	0.34	0.37	
Expectations	0.48	0.49	0.47		0.55	0.47	0.43	0.47	0.46	
Closed Net.	0.12	0.13	0.12		0.10	0.15	0.15	0.14	0.09	
Peer Dropout	0.12	0.14	0.09	*	0.09	0.11	0.24	0.10	0.09	***
Peer Exams	0.48	0.41	0.57	***	0.51	0.35	0.31	0.53	0.61	***
Peers PSE	0.34	0.31	0.37	*	0.43	0.23	0.21	0.30	0.45	***
Counselor	5.84	6.38	5.26	***	5.62	7.26	6.69	5.53	4.97	***
Honors	0.46	0.42	0.50	**	0.41	0.33	0.51	0.49	0.51	***
HS GPA	3.15	3.09	3.21	**	3.13	3.06	3.05	3.16	3.27	*
Achiever	0.13	0.24	0.00	***						

Note: Significance levels are reported for the between groups ANOVA; *p<=.05, **p<=.01, ***p<=.001

characteristics. Most of these differences related to issues of socioeconomic status and demography. Though more than fifty years have passed since Brown v. Board of Education (Supreme Court of the United States, 1954), demographic compositions of neighborhoods and schools still expose a segregated United States of America (Orfield & Eaton, 1996). Statistically significant differences in the racial/ethnic and socioeconomic make up of the participating schools in this study suggested that even one urban school district experienced distinct and heterogeneous student bodies.

Similarities and differences across these schools were explored to better understand the situated contexts within which students made educational decisions. The means of each characteristic for WSA schools and non-WSA schools are detailed in Table 4.1; this table also provides an analysis of variance between the two groups of schools.

Background and Social Origin. It should come as no surprise that the WSA schools had greater racial and ethnic diversity among their student population. Within the WSA schools, 40% of the student body self-identified as 'White,' compared to nearly 65% of the student population in non-WSA schools. Except for the Native American, Hawaiian, and Alaskan Native population, all racial and ethnic minority groups were more populous in the WSA schools.

Between individual schools, ethnic composition also varied. Two-thirds of the student body in School 3 (WSA) self-identified as students of color, compared to one-third of the students in School 5 (non-WSA). While most students of color identified as African American, sizable Hispanic and Asian populations also existed. In Schools 2 (WSA) and 3 (WSA), nearly 15% of the student body was comprised of Hispanic

students. The Asian population was particularly large in Schools 1 (WSA) and 3 (WSA) where 28% and 19% of the students respectively self identified as ethnic Asians. Among the two non-WSA schools, School 4 was more ethnically diverse than School 5.

Like race and ethnicity, the level of mother's education was highly variable. Students in non-WSA schools reported that, on average, their mothers had completed almost two years of college. In comparison, mothers of students in WSA schools had completed just one year of college. The gap in mother's education rose to 1.5 years when comparing School 5 (non WSA) and School 3 (WSA).

As measured by home ownership, family structure, and number of siblings, family life was different for students in WSA schools than their non-WSA counterparts. These differences highlighted the socioeconomic divide between the two types of schools. While slightly more than half of the WSA students lived in owner-occupied housing, more than 75% of non-WSA students resided in such. Again, the gap between students in School 3 (WSA) and School 5 (non WSA) was the largest; less than half the students in School 3 (48%) lived in owner occupied housing, compared to 80% of the students enrolled in School 5.

Furthermore, students in non-WSA schools were statistically more likely to live with both their mother and father and to have fewer siblings. About one-half of students in WSA schools lived with their mother and father and on average they had three siblings. In contrast, 60% of the students in non-WSA schools lived with both their mother and father and they reported about 2.5 siblings. Students in Schools 2 (WSA) and 3 (WSA) were the most likely to live in a single or step-parent home and to have more than three siblings.

The differences in background and social origin can be summarized as follows: compared to students in non-WSA schools, students in WSA participating schools were more predominantly students of color, their mothers were less educated, they were more likely to live in rental units, they were less likely to live with both their mother and their father, and they had more siblings. These comparisons suggested that students in WSA schools had more limited access to social and financial capital.

Parental Involvement. It was stated earlier that the two groups of students were not statistically different in measures of parental involvement. Notwithstanding their similarities, it is still important to understand the type and regularity of interaction between parent and student.

In general, students characterized interaction with their parents as infrequent. While approximately half of the students strongly agreed with the statement that their family had always expected them to go to college, only one-third of the students reported having frequent discussions about school with their parents.

Furthermore, only one-sixth of surveyed students strongly agreed with the statement that they had frequent in-depth conversations with their parents and only one-third of the students strongly agreed that they could go to their parents for advice. Not only were parents and students limited in their school-related interactions, but these findings suggested only a few students perceived a communicative and close relationship with their parents at the latter stages of their teenage years.

Social Networks. Parental social networks did not differ between WSA and non-WSA schools; however, peer networks and school counselor networks were noticeably different. When students were asked if they strongly agreed that their parents knew the

parents of their friends, only 12% in either school-type responded affirmatively. This suggested that few students experienced a closed parental social network.

Given the differences in background and social origin characteristics, it is not surprising that peer traits also differed between school types. Compared to students in non-WSA schools, students in WSA schools reported greater numbers of friends who had dropped out of high school, fewer friends who had taken a college entrance exam, and fewer friends who aspired to earn a four-year postsecondary degree.

Specifically, 15% of WSA students reported that half or more of their friends had dropped out (compared to 10% for non-WSA students); it is worth noting that one-quarter of the students in School 3 (WSA) reported that half or more of their friends had already dropped out of high school.

The numbers of students reporting that more than half of their peers had prepared for college by taking a college entrance exam was 40% for seniors at WSA participating schools and 57% for students at non-WSA schools. As expected, the gap in college preparation of peers was greatest between students in School 3 (WSA) and School 5 (non WSA), where 31% and 61% of students respectively reported that a majority of friends had taken at least one of the college entrance examinations.

Significant variation by school characterized the degree to which one's friends planned to earn a four-year postsecondary degree. Only one in five students at Schools 2 (WSA) and 3 (WSA) reported that more than half their friends planned to earn a four-year degree. In contrast, one in three students in School 4 (non WSA) and almost one in two students in Schools 1 (WSA) and 5 (non-WSA) reported similarly.

Overall, postsecondary aspirations were uncommon for a majority of students, regardless of school. One-third of students from either type of school aspired to a four-year degree and many students had large numbers of friends who had dropped out.

Students from both types of schools also reported different frequencies of academic-related interaction with their school guidance counselor. Interestingly, students in WSA schools claimed to discuss academic issues with their counselor more often than students in non-WSA schools. While students in non-WSA schools reported just over five discussions in a 12 month period, students in WSA schools reported having over six discussions during the same time span. These numbers may not be too surprising. Students from higher socioeconomic backgrounds generally receive more academic guidance from home (Benson & Martin, 2003; Crosnoe, 2001); therefore, they may require, or seek out, less educational assistance from school professionals.

The greatest difference in counselor interaction existed between students from School 2 (WSA) who reported an average of more than seven visits per year and students at School 5 (non WSA) who reported an average of just under five visits per year.

When considering the apparent low levels of parental involvement, the low incidence of closed parent networks, and the general absence of academic related norms within friendship groups, it appeared many of these students had limited access to social capital. Furthermore, the lack of available social capital was most pronounced among students in WSA schools.

Academic Preparation. The final student comparison looked at differences in academic preparation. As one might have expected, students in WSA schools generally were less prepared academically than their peers in non-WSA schools. In fact, while 50%

of the students in non-WSA schools reported taking an Advanced Placement or honors course during high school, only 42% of WSA students made the same claim. Furthermore, the average reported G.P.A. was 3.21 in non-WSA schools and 3.08 in WSA schools.

On many key characteristics, students enrolled at WSA schools could be considered less privileged and less prepared for postsecondary education. While both groups of students reported similar levels of parental involvement, students in WSA schools had access to fewer financial resources, they were more limited in their access to social capital, and they were less prepared academically for postsecondary education.

Variance by Individual School. Knowing that significant variance defined student characteristics between those at WSA and non-WSA schools was important, but it was not the whole story. In addition to ascertaining WSA-program level difference, it was also important to understand school level difference. In fact, the three WSA program schools were, at times, significantly different from each other and the two non-WSA program schools were also different from one another. Full comparisons across schools are detailed in Table 4.1.

As noted in Table 4.1, among the WSA schools, students at School 1 generally had characteristics most similar to their counterparts at the non-WSA schools. Students at School 1 reported higher levels of financial resources, greater availability of social capital, and higher grade point averages than students at the other two WSA schools. Students attending School 3 (WSA), on the other hand, largely consisted of traditionally underrepresented populations. Two-thirds of the School 3 student population was comprised of students of color, less than half of the students lived in owner-occupied

homes (48%), and less than half of the students lived with two-parent families (45%); furthermore, these students had more siblings, their parents were less involved in their schooling, and their peer groups appeared more academically disengaged.

Two characteristics of students at School 3, however, did not fit the 'pattern' of disadvantage. Students at School 3 were more likely than students from the other WSA schools to strongly agree that they could go to their parent(s) for advice and they were more likely to have taken an Advanced Placement or Honors course in high school. In both of these traits, students in School 3 appeared virtually identical to students in non-WSA schools.

The two non-WSA schools were also different from one another, though the magnitude of difference was most often smaller than the variances between WSA schools. Generally, the students in School 5 (non WSA) seemed most advantaged. They appeared to have greater financial resources, access to more available social capital, and higher academic achievement.

Analysis of College Choice. The college choice behavior of students fell into three fairly equally distributed categories: roughly one-third of the sampled students did not enroll in an institution of postsecondary education the fall after high school graduation, one-third enrolled at an in-state two-year institution, and one-third enrolled at an in-state four-year or out-of-state institution (see Table 4.2 for a full description of the postsecondary outcomes). Of those enrolling in four-year or out-of-state institutions, about one-half enrolled at in-state four-year-public universities, one-third at out-of-state institutions, and about one-sixth at in-state four-year-private universities.

Before analyzing the impact of student characteristics on college choice, it was necessary to take a brief look at students' actual postsecondary destinations. Given the student characteristics described above, one would have expected the students in non-WSA schools to have had higher postsecondary enrollment rates, and to be more likely to enroll in four-year programs.

In fact, students in non-WSA schools enjoyed higher postsecondary enrollment rates, though sizable populations in both types of schools did not attend college the fall after high school graduation. Approximately 60% of WSA students enrolled in some type of postsecondary education; that number rose to 70% for students in non-WSA schools.

Statistically significant differences also emerged between the types of postsecondary institution attended. While WSA students were less likely to enroll at in-state, 4-year, public institutions (13% vs. 19%), they were *more* likely to enroll at in-state, 4-year, private institutions (7% vs. 3%). This was not the only surprising finding. Two-year college enrollment also behaved differently than expected. Among the total student population, approximately one-third of *both* WSA and non-WSA students enrolled in 2-year colleges, contradicting the assumption that WSA students would be more likely to pursue the 2-year college route. On the other hand, WSA students were less likely to enroll at out-of-state institutions (8% vs. 14%).

Table 4.2
College Choice Outcomes as Percent of Sample
Data used with permission from UW-BHS, year 2002, N=1097.

	All Students	WSA Schools	Non-WSA Schools	School 1 (WSA)	School 2 (WSA)	School 3 (WSA)	School 4 (Non-WSA)	School 5 (Non-WSA)
N	*1097*	*568*	*529*	*244*	*146*	*178*	*272*	*257*
4yr. Public In state	15.6%	12.7%	18.7%	16.8%	5.5%	12.9%	13.6%	24.1%
4yr. Private In state	5.4%	7.4%	3.2%	7.8%	8.9%	5.6%	3.7%	2.7%
2yr. In state	32.2%	31.2%	33.3%	28.7%	34.2%	32.0%	36.8%	29.6%
Out of State	10.8%	8.1%	13.6%	12.7%	3.4%	5.6%	12.1%	15.2%
No PSE	36.1%	40.7%	31.2%	34.0%	47.9%	43.8%	33.8%	28.4%
Total	100.1%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The first phase of analysis clarified that students in this urban school district were quite different from one another depending on their neighborhoods and where they went to school. The next question thus became, how did student, family, and peer characteristics influence college choice? And, furthermore, were the magnitudes of effects, for these characteristics, different for students enrolled in WSA schools than for non-WSA schools? Determining how these characteristics interacted to influence college choice required a more sophisticated statistical method. Phase 2 analyzed the relationship between student characteristics and college choice using a multinomial logit model.

Phase Two: Background Variables and College Choice

As described in Chapter Two, five categories of explanatory variables were included in the multinomial logit models: family background and social origin, parental involvement, social networks, academic preparation, and WSA program.

For the second analysis phase, the first four of these variable categories were included in three separate multinomial logit models. The first model included a full sample of all students at WSA and non-WSA schools while subsequent models divided the sample to include only students from WSA or non-WSA schools.

Full Sample. Because it combined students from the WSA and the non-WSA schools, the full sample model was more robust (in terms of the Chi-square values) than the divided sample models. The full sample model also served as a reference point for interpreting the divided sample models.

After controlling for other background and achievement characteristics, many students of color enjoyed some advantages in postsecondary enrollment when compared to their White classmates (see Table 4.3 for a full description of the full sample model).

Table 4.3 Effects of ethnicity, gender, family background, parental involvement, social networks, and academic achievement on the odds of postsecondary choices. N=1097.

	Pub vs Priv	Pub vs Out	Pub vs 2 yr	Pub vs No	Priv vs Out	Priv vs 2 yr	Priv vs No	Out vs 2 yr	Out vs No	2 yr vs No
	β (e^b) Sig.	β (e^b) Sig.	β (e^b) Sig.	β (e^b) Sig.	β (e^b) Sig.	β (e^b) Sig.	β (e^b) Sig.	β (e^b) Sig.	β (e^b) Sig.	β (e^b) Sig.
Ethnicity										
Black	-0.291	-0.215	0.707 *	0.331	0.076	0.997 *	0.621	0.922 *	0.546	-0.376
	(0.75)	(0.81)	(2.03)	(1.39)	(1.08)	(2.71)	(1.86)	(2.51)	(1.73)	(0.69)
Hispanic	-0.411	-0.423	-0.089	-0.221	-0.011	0.322	0.191	0.333	0.202	-0.131
	(0.66)	(0.66)	(0.91)	(0.80)	(0.99)	(1.38)	(1.21)	(1.39)	(1.22)	(0.88)
E. Asian	-0.249	0.229	-0.107	0.355	0.478	0.143	0.605	-0.336	0.126	0.462
	(0.78)	(1.26)	(0.90)	(1.43)	(1.61)	(1.15)	(1.83)	(0.71)	(1.13)	(1.59)
O. Asian	-0.241	0.478	-0.519	0.334	0.719	-0.277	0.575	-0.997	-0.144	0.853 **
	(0.79)	(1.61)	(0.60)	(1.40)	(2.05)	(0.76)	(1.78)	(0.37)	(0.87)	(2.35)
Nat Amer	-1.496	-0.574	-0.63	-0.766	0.922	0.865	0.729	-0.057	-0.193	-0.136
	(0.22)	(0.56)	(0.53)	(0.46)	(2.51)	(2.38)	(2.07)	(0.94)	(0.82)	(0.87)
Gender										
Female	-0.681	0.358	0.036	0.092	1.039 **	0.717 *	0.773 *	-0.323	-0.267	0.056
	(0.51)	(1.43)	(1.04)	(1.10)	(2.83)	(2.05)	(2.17)	(0.72)	(0.77)	(1.06)
Family										
Mom Ed.	-0.138	-0.232 ***	-0.072	-0.007	-0.094	0.066	0.131	0.159 **	0.224 ***	0.065
	(0.75)	(0.62)	(0.86)	(0.98)	(0.82)	(1.15)	(1.31)	(1.39)	(1.60)	(1.15)
Home	0.749	-0.206	0.679 **	0.512	-0.956 *	-0.071	-0.238	0.885 **	0.718 *	-0.167
	(2.12)	(0.81)	(1.97)	(1.67)	(0.38)	(0.93)	(0.79)	(2.42)	(2.05)	(0.85)
Two-par.	-0.761 *	-0.133	0.074	0.184	0.628	0.835 *	0.945 *	0.207	0.317	0.110
	(0.47)	(0.88)	(1.08)	(1.20)	(1.87)	(2.31)	(2.57)	(1.23)	(1.37)	(1.12)
Siblings	0.045	-0.030	0.009	-0.070	-0.116	-0.037	-0.116	0.039	-0.040	-0.079 *
	(1.09)	(0.94)	(1.02)	(0.87)	(0.80)	(0.93)	(0.80)	(1.08)	(0.92)	(0.86)
Par Involv										
Disc. Ed.	-0.016	-0.019	0.027	0.005	-0.004	0.043	0.022	0.046	0.025	-0.021
	(0.98)	(0.98)	(1.03)	(1.01)	(0.99)	(1.04)	(1.02)	(1.05)	(1.03)	(0.98)
Indepth	-0.164	-0.433	0.288	-0.203	-0.269	0.452	-0.039	0.722 *	0.230	-0.491
	(0.85)	(0.65)	(1.33)	(0.82)	(0.76)	(1.57)	(0.96)	(2.06)	(1.26)	(0.61)
Advice	0.244	0.407	-0.133	-0.029	0.163	-0.377	-0.273	-0.540	-0.436	0.104
	(1.28)	(1.50)	(0.88)	(0.97)	(1.18)	(0.69)	(0.76)	(0.58)	(0.65)	(1.11)
Expec.	-0.029	0.254	0.303	0.758 ***	0.283	0.332	0.787 *	0.050	0.505	0.455 **
	(0.97)	(1.29)	(1.35)	(2.13)	(1.33)	(1.39)	(2.20)	(1.05)	(1.66)	(1.58)
Networks										
Closed	-1.002 *	-0.694	-0.689	-0.633	0.308	0.313	0.369	0.005	0.061	0.056
	(0.37)	(0.50)	(0.50)	(0.53)	(1.36)	(1.37)	(1.45)	(1.01)	(1.06)	(1.06)
Peer drop.	0.767	-0.614	-0.207	-0.442	-1.381	-0.975	-1.209	0.406	0.172	-0.234
	(2.15)	(0.54)	(0.81)	(0.64)	(0.25)	(0.38)	(0.30)	(1.50)	(1.19)	(0.79)
Peer ex.	0.197	0.172	0.892 ***	0.983 ***	-0.025	0.694	0.786 *	0.719 *	0.811 **	0.092
	(1.22)	(1.19)	(2.44)	(2.67)	(0.98)	(2.00)	(2.19)	(2.05)	(2.25)	(1.10)
Peer PSE	-0.003	0.029	0.651 **	0.761 **	0.032	0.654	0.764 *	0.622 *	0.732 *	0.110
	(0.99)	(1.03)	(1.92)	(2.14)	(1.03)	(1.92)	(2.15)	(1.86)	(2.08)	(1.12)
Counselor	-0.038	0.071 *	0.029	0.081 **	0.109 *	0.067	0.119 **	-0.042	0.010	0.052 *
	(0.87)	(1.31)	(1.12)	(1.37)	(1.52)	(1.29)	(1.58)	(0.96)	(1.01)	(1.22)
Achievement										
Honors	-0.408	-0.250	0.838 ***	1.104 ***	0.158	1.245 ***	1.512 ***	1.088 ***	1.354 ***	0.267
	(0.67)	(0.78)	(2.31)	(3.02)	(1.17)	(3.47)	(4.54)	(2.97)	(3.87)	(1.31)
HS GPA	0.436	0.266	1.143 ***	1.509 ***	-0.170	0.707 *	1.073 ***	0.878 ***	1.244 ***	0.366 **
	(1.37)	(1.21)	(2.27)	(2.95)	(0.84)	(1.66)	(2.16)	(1.87)	(2.44)	(1.30)

Pseudo R^2	0.185
Log Lik'l'hd	-1269.5
Chi Square	575.19

Note: *** p≤.001, ** p≤.01, * p≤.05; β=Coefficient, e^b=factor change in the odds for a unit or St. Dev. increase

African American students had higher odds than White students of enrolling in four-year universities and out-of-state institutions than enrolling at community colleges. Additionally, students identified as Other Asian experienced an increase in the odds of enrolling at two-year colleges compared to not enrolling in any postsecondary institution.

While African American and to a lesser degree Other Asian students experienced college going advantages, Hispanic, Native American, and East Asian students were not statistically different from their White colleagues in their college going behavior.

Being female had a statistically significant impact on college choice when the decision included an in-state private university. Females were at least two times more likely than males to choose a private university over a two-year college, out-of-state institution, or not enrolling at all.

Family background exhibited a statistically significant impact on college choice. Mother's education and home ownership were positively associated with enrolling out-of-state as opposed to enrolling in-state or not enrolling at all. Home ownership was also associated with enrolling at a public university as opposed to a two-year college. Similarly, two-parent family status was also associated with making a high-status college choice. Students from two-parent families experienced an increase in the odds of enrolling at in-state private universities compared to other in-state options or not enrolling at all. Lastly, even after controlling for other background and achievement measures, students with larger numbers of siblings had higher odds of not enrolling at all compared to enrolling at in-state two-year institutions.

The four variables employed as proxies for parental involvement demonstrated very different effects on college choice. Having regular in-depth conversations with

parents improved the odds of choosing an out-of-state institution compared to an in-state community college. Furthermore, students who perceived that their families had always expected them to go to college experienced greater odds in enrolling in some form of postsecondary education than not enrolling at all. On the other hand, frequently discussing school and school events and having a high degree of comfort in going to parents for advice had no statistically significant influence on college choice.

Social networks generally exhibited a positive impact on choosing higher status institutions. A closed network improved the odds of choosing a private over a public university. Peer groups who were actively preparing for college increased the odds of student enrollment at universities compared to community colleges or not enrolling at all. Finally, greater interaction with a guidance counselor was associated with greater odds of enrolling at an in-state institution compared to not enrolling at all or enrolling out-of-state.

The two proxies for academic achievement (taking at least one honors course and one's composite high school G.P.A.) affected college choice in a manner similar to peer groups who were preparing for college. Honors coursework and high school G.P.A. were associated with increased odds of enrolling at high status institutions compared to enrolling at two-year colleges or not enrolling at all. In addition, higher G.P.A.'s were associated with an increase in the odds of two-year college enrollment, compared to not enrolling at all.

Non-WSA Sample. Dividing the sample to include only students from a particular type of school made it possible to determine whether the relationships between

background characteristics and postsecondary opportunity differed between students from different school types. Results from the non-WSA sample are reported in Table 4.4.

Compared to their white peers, African American students in the non-WSA schools experienced greater odds in enrolling at in-state public universities or out-of-state institutions compared to two-year community colleges. No other ethnic or gender identity experienced a statistically significant association with college choice.

The family background proxies were generally associated with high status college enrollment decisions. Higher levels of mother's education correlated to increased odds of private university or out-of-state enrollment, compared to public two and four-year institutions. Home ownership was associated with greater odds of public university or out-of-state enrollment compared to private university or two-year community college enrollment. Finally, the odds of enrolling at a private institution, compared to not enrolling at all increased by a factor of nearly eight for students living in two-parent homes.

Among the parental involvement measures, only going to parents for advice and perceiving postsecondary expectations appeared to impact college choice. Students who felt comfortable going to their parents for advice experienced greater odds of going to school in-state (either two or four-year public campuses) compared to enrolling out-of-state. Students who always felt the expectation to go to college were associated with increased odds of enrollment at public two and four-year and out-of-state institutions compared to not enrolling at all.

Table 4.4 Effects of ethnicity, gender, family background, parental involvement, social networks, and academic achievement on the odds of postsecondary choices. Non-WSA schools only. N=529.

	Pub vs Priv		Pub vs Out		Pub vs 2 yr		Pub vs No		Priv vs Out		Priv vs 2 yr		Priv vs No		Out vs 2 yr		Out vs No		2 yr vs No	
	β	Sig.	β	Sig.	β	Sig.	β	Sig.	β	Sig.	β	Sig.	β	Sig.	β	Sig.	β	Sig.	β	Sig.
	(e^b)		(e^b)		(e^b)		(e^b)		(e^b)		(e^b)		(e^b)		(e^b)		(e^b)		(e^b)	
Ethnicity																				
Black	33.795		-0.447		1.252	*	0.512		-34.24		-32.54		-33.28		1.699	**	0.959		-0.740	
	NA		(0.64)		(3.50)		(1.67)		NA		NA		NA		(5.47)		(2.61)		(0.48)	
Hispanic	-1.177		-0.528		-0.121		-0.015		0.649		1.056		1.162		0.407		0.513		0.106	
	(0.31)		(0.59)		(0.89)		(0.98)		(1.91)		(2.88)		(3.20)		(1.50)		(1.67)		(1.11)	
E. Asian	0.518		0.741		0.263		0.492		0.223		-0.255		-0.027		-0.480		-0.250		0.228	
	(1.68)		(2.10)		(1.30)		(1.63)		(1.25)		(0.77)		(0.97)		(0.62)		(0.78)		(1.26)	
O. Asian	-0.670		34.13		-1.198		-0.564		34.801		-0.528		0.106		-35.33		-34.69		0.635	
	(0.51)		NA		(0.30)		(0.57)		NA		(0.59)		(1.11)		NA		NA		(1.89)	
Nat Amer	32.853		-0.791		-0.842		-0.983		-33.64		-33.69		-33.84		-0.05		-0.192		-0.141	
	NA		(0.45)		(0.43)		(0.37)		NA		NA		NA		(0.95)		(0.83)		(0.87)	
Gender																				
Female	0.184		0.285		0.015		0.092		0.101		-0.170		-0.093		-0.270		-0.194		0.077	
	(1.20)		(1.33)		(1.01)		(1.10)		(1.11)		(0.84)		(0.91)		(0.76)		(0.82)		(1.08)	
Family																				
Mom Ed.	-0.312	*	-0.185	*	0.002		-0.061		0.127		0.314	*	0.251		0.187	*	0.124		-0.063	
	(0.51)		(0.67)		(1.00)		(0.88)		(1.32)		(1.97)		(1.72)		(1.50)		(1.31)		(0.87)	
Home	1.479		-0.327		0.793	*	0.460		-1.806	*	-0.685		-1.018		1.121	*	0.787		-0.333	
	(4.39)		(0.72)		(2.21)		(1.58)		(0.16)		(0.50)		(0.36)		(3.07)		(2.20)		(0.72)	
Two-par.	-1.378		0.220		0.366		0.687		1.597		1.744		2.064	*	0.146		0.467		0.321	
	(0.25)		(1.25)		(1.44)		(1.99)		(4.94)		(5.72)		(7.88)		(1.16)		(1.60)		(1.38)	
Siblings	0.009		-0.064		-0.040		-0.040		-0.073		-0.049		-0.049		0.024		0.024		0.000	
	(1.02)		(0.89)		(0.93)		(0.93)		(0.88)		(0.91)		(0.92)		(1.04)		(1.04)		(1.00)	
Par Involv																				
Disc. Ed.	0.496		-0.141		0.390		0.173		-0.636		-0.105		-0.323		0.531		0.314		-0.218	
	(1.64)		(0.87)		(1.48)		(1.19)		(0.53)		(0.90)		(0.72)		(1.70)		(1.37)		(0.80)	
Indepth	1.001		-0.499		0.180		-0.292		-1.509		-0.830		-1.302		0.679		0.207		-0.472	
	(2.75)		(0.61)		(1.20)		(0.75)		(0.22)		(0.44)		(0.27)		(1.97)		(1.23)		(0.62)	
Advice	-0.189		0.795	*	-0.099		0.212		0.984		0.090		0.401		-0.894	*	-0.583		0.310	
	(0.83)		(2.21)		(0.91)		(1.24)		(2.68)		(1.09)		(1.49)		(0.41)		(0.56)		(1.36)	
Expec.	0.225		0.191		0.556		1.101	***	-0.034		0.330		0.876		0.365		0.910	*	0.545	*
	(1.25)		(1.21)		(1.74)		(3.01)		(0.97)		(1.39)		(2.40)		(1.44)		(2.48)		(1.72)	
Networks																				
Closed	-1.524		-0.824		-0.797		-0.964		0.700		0.726		0.559		0.026		-0.141		-0.167	
	(0.22)		(0.44)		(0.45)		(0.38)		(2.01)		(2.07)		(1.75)		(1.03)		(0.87)		(0.85)	
Peer drop.	-1.194		-0.728		-0.104		0.066		0.467		1.091		1.261		0.624		0.794		0.170	
	(0.30)		(0.48)		(0.90)		(1.07)		(1.59)		(2.98)		(3.53)		(1.87)		(2.21)		(1.19)	
Peer ex.	-20.58		0.011		0.560		0.992	**	20.592		21.140		21.573		0.548		0.981	*	0.433	
	NA		(1.01)		(1.75)		(2.70)		NA		NA		NA		(1.73)		(2.67)		(1.54)	
Peer PSE	0.992		0.528		0.866	*	1.230	**	-0.464		-0.127		0.238		0.338		0.702		0.365	
	(2.70)		(1.70)		(2.38)		(1.23)		(0.63)		(0.88)		(1.27)		(1.40)		(2.02)		(1.44)	
Counselor	0.000		0.041		0.030		0.032		0.041		0.030		0.032		-0.011		-0.009		0.002	
	NA		(1.15)		(1.11)		(1.11)		(1.15)		(1.11)		(1.12)		(0.96)		(0.97)		(1.01)	
Achievement																				
Honors	-0.393		-0.411		0.378		0.852	*	-0.019		0.771		1.244		0.789	*	1.263	***	0.474	
	(0.68)		(0.66)		(1.46)		(2.34)		(0.98)		(2.16)		(3.47)		(2.20)		(3.54)		(1.61)	
HS GPA	-1.033		0.353		1.265	***	1.641	***	1.386		2.298	*	2.674	**	0.912	**	1.288	***	0.376	*
	(0.48)		(1.29)		(2.46)		(3.21)		(2.68)		(5.13)		(6.70)		(1.91)		(2.50)		(1.31)	

Pseudo R^2	0.220
Log Lik'l'hd	-588.0
Chi Square	331.68

Note: *** p≤.001, ** p≤.01, * p≤.05; β=Coefficient, e^b=factor change in the odds for a unit or St. Dev. increase
NA designates coefficients which are unreliable as determined by *p* values of 1 and values of 0 or infinity for factor changes in the odds.

Like the parental involvement variables, only two measures of social networks were associated with college choice for students in non-WSA schools. Students with peer groups comprised of students largely preparing for college were associated with increased odds of public university or out-of-state enrollment compared to two-year college enrollment or not enrolling at all.

While honors coursework improved the odds of public university or out-of-state enrollment compared to two-year enrollment or not enrolling at all, high school G.P.A. was associated with a greater range of high status postsecondary choices. Better G.P.A.'s were associated with increased odds for high status enrollment compared to two-year college enrollment or not enrolling at all. Furthermore, G.P.A. was associated with increased odds of community college enrollment compared to not enrolling at all.

WSA Only Sample. As indicated previously, dividing the sample to include only students from a particular type of school made it possible to determine whether the relationships between background characteristics and postsecondary opportunity differed between students from different school types. Results from the WSA-only sample are reported in Table 4.5.

Within the WSA school student bodies, students identifying with an Asian ethnicity had greater odds than their white classmates of enrolling at a two-year institution compared to not enrolling at all. Native American students experienced greater odds of enrolling at in-state private universities as opposed to not enrolling at all.

A female private university advantage also emerged among students at the WSA schools. Compared to their male classmates, females experienced increased odds of local

Table 4.5 Effects of ethnicity, gender, family background, parental involvement, social networks, and academic achievement on the odds of postsecondary choices. WSA schools only. N=568.

	Pub vs Priv β (e^b) Sig.	Pub vs Out β (e^b) Sig.	Pub vs 2 yr β (e^b) Sig.	Pub vs No β (e^b) Sig.	Priv vs Out β (e^b) Sig.	Priv vs 2 yr β (e^b) Sig.	Priv vs No β (e^b) Sig.	Out vs 2 yr β (e^b) Sig.	Out vs No β (e^b) Sig.	2 yr vs No β (e^b) Sig.
Ethnicity										
Black	-0.476 (0.62)	-0.329 (0.72)	0.255 (1.29)	0.162 (1.18)	0.147 (1.16)	0.730 (2.08)	0.638 (1.89)	0.583 (1.79)	0.491 (1.63)	-0.092 (0.92)
Hispanic	0.099 (1.10)	-0.625 (0.54)	-0.239 (0.79)	-0.269 (0.76)	-0.725 (0.48)	-0.338 (0.71)	-0.368 (0.69)	0.387 (1.47)	0.356 (1.43)	-0.030 (0.97)
E. Asian	-0.498 (0.61)	-0.536 (0.59)	-0.747 (0.47)	0.213 (1.24)	-0.037 (0.96)	-0.248 (0.78)	0.712 (2.04)	-0.211 (0.81)	0.749 (2.12)	0.96 * (2.61)
O. Asian	0.116 (1.12)	-0.295 (0.74)	-0.413 (0.66)	0.711 (2.04)	-0.411 (0.66)	-0.528 (0.59)	0.595 (1.81)	-0.118 (0.89)	1.006 (2.73)	1.124 ** (3.08)
Nat Amer	-2.496 (0.08)	30.19 NA	-0.622 (0.54)	-0.918 (0.40)	32.69 NA	1.874 * (6.51)	1.578 (4.85)	-30.82 NA	-31.11 NA	-0.296 (0.74)
Gender										
Female	-1.191 * (0.30)	0.507 (1.66)	-0.037 (0.96)	-0.011 (0.99)	1.697 ** (5.46)	1.153 * (3.17)	1.180 * (3.25)	-0.544 (0.58)	-0.517 (0.60)	0.027 (1.03)
Family										
Mom Ed.	-0.197 (0.69)	-0.315 ** (0.55)	-0.200 * (0.68)	-0.022 (0.96)	-0.118 (0.80)	-0.003 (0.99)	0.174 (1.40)	0.115 (1.25)	0.293 ** (1.75)	0.178 ** (1.41)
Home	0.467 (1.59)	-0.187 (0.83)	0.515 (1.67)	0.384 (1.47)	-0.654 (0.52)	0.048 (1.05)	-0.082 (0.92)	0.702 (2.02)	0.571 (1.77)	-0.130 (0.88)
Two-par.	-0.890 (0.41)	-0.553 (0.58)	-0.216 (0.81)	-0.267 (0.77)	0.337 (1.40)	0.674 (1.96)	0.622 (1.86)	0.337 (1.40)	0.285 (1.33)	-0.051 (0.95)
Siblings	0.105 (1.24)	0.002 (1.00)	0.055 (1.12)	-0.069 (0.87)	-0.103 (0.81)	-0.050 (0.90)	-0.174 (0.70)	0.053 (1.12)	-0.071 (0.86)	-0.123 (0.77)
Par Involv										
Disc. Ed.	-0.378 (0.69)	0.180 (1.20)	-0.445 (0.64)	-0.354 (0.70)	0.557 (1.75)	-0.068 (0.93)	0.023 (1.02)	-0.625 (0.54)	-0.534 (0.59)	0.091 (1.10)
Indepth	-0.035 (0.97)	-0.124 (0.88)	0.686 (1.99)	0.019 (1.02)	-0.090 (0.91)	0.721 (2.06)	0.054 (1.06)	0.810 (2.25)	0.144 (1.15)	-0.667 (0.51)
Advice	0.212 (1.24)	-0.223 (0.80)	-0.356 (0.70)	-0.363 (0.70)	-0.435 (0.65)	-0.568 (0.57)	-0.575 (0.56)	-0.133 (0.88)	-0.140 (0.87)	-0.007 (0.99)
Expec.	-0.206 (0.81)	0.397 (1.49)	-0.067 (0.93)	0.433 (1.54)	0.603 (1.83)	0.138 (1.15)	0.639 (1.89)	-0.464 (0.63)	0.036 (1.04)	0.501 * (1.65)
Networks										
Closed	-0.735 (0.48)	-0.533 (0.59)	-0.551 (0.58)	-0.309 (0.73)	0.202 (1.22)	0.184 (1.20)	0.426 (1.53)	-0.018 (0.98)	0.224 (1.25)	0.243 (1.27)
Peer drop.	1.529 (4.61)	0.046 (1.05)	-0.430 (0.65)	-0.824 (0.44)	-1.483 (0.23)	-1.959 (0.14)	-2.353 (0.10)	-0.476 (0.62)	-0.87 (0.42)	-0.393 (0.68)
Peer ex.	0.660 (1.93)	0.648 (1.91)	1.378 *** (3.97)	0.994 * (2.70)	-0.012 (0.99)	0.718 (2.05)	0.334 (1.40)	0.730 (2.07)	0.346 (1.41)	-0.384 (0.68)
Peer PSE	-0.607 (0.55)	-0.603 (0.55)	0.304 (1.35)	0.365 (1.44)	0.004 (1.00)	0.911 (2.49)	0.972 * (2.64)	0.907 (2.48)	0.968 (2.63)	0.062 (1.06)
Counselor	-0.011 (0.95)	0.092 (1.10)	0.026 (1.03)	0.109 ** (1.12)	0.103 (1.53)	0.037 (1.17)	0.121 * (1.64)	-0.066 (0.76)	0.017 (1.07)	0.084 ** (1.41)
Achievement										
Honors	0.063 (1.07)	-0.122 (0.89)	1.543 *** (4.68)	1.616 *** (5.03)	-0.185 (0.83)	1.480 *** (4.39)	1.553 *** (4.73)	1.665 *** (5.29)	1.738 *** (5.69)	0.073 (1.08)
HS GPA	0.687 (1.64)	-0.111 (0.92)	1.058 *** (2.13)	1.422 *** (2.77)	-0.798 (0.56)	0.371 (1.30)	0.735 (1.69)	1.169 ** (2.31)	1.533 *** (3.00)	0.364 * (1.30)

Pseudo R^2	0.218
Log Lik'l'hd	-616.3
Chi Square	343.23

Note: *** p≤.001, ** p≤.01, * p≤.05; β=Coefficient, e^b=factor change in the odds for a unit or St. Dev. increase

NA designates coefficients which are unreliable as determined by *p* values of 1 and values of 0 or infinity for factor changes in the odds.

private university enrollment compared to public university, out-of-state, or community college enrollment and compared to not enrolling at all.

The only family background measure that realized statistical significance for WSA student bodies was mother's education. Higher levels of mother's education were associated with increased odds of out-of-state and two-year enrollment compared to not enrolling at all; interestingly, higher levels of mother's education were also associated with *lower* odds of public university enrollment compared to enrollment at out-of-state institutions or two-year colleges.

In terms of parental involvement, students who felt their families always expected them to go to college experienced greater odds of local community college enrollment compared to not enrolling at all. Social networks also influenced college choice. Students whose peers had taken a college entrance exam generally experienced greater odds of local university enrollment compared to enrolling at a local two-year college or not enrolling at all. Similarly, students whose peers largely expected to go to college had greater odds of private university enrollment compared to not enrolling at all. Finally, increased levels of guidance counselor interaction were associated with greater odds of in-state postsecondary enrollment of any kind compared to not enrolling at all.

Among students in the WSA schools, academic achievement, as measured by honors coursework and high school G.P.A. experienced a strong association with high status enrollment compared to enrolling at community colleges or not enrolling at all.

Comparing the models. While many similarities in the findings emerged across the three models, five interesting comparisons between the non-WSA and WSA-only samples are highlighted here:

1. The African American advantage for local university or out-of-state enrollment compared to community college enrollment only appeared to exist among students in the non-WSA schools.

2. On the other hand, the private university enrollment advantage experienced by females appeared to exist only among female students at the WSA schools.

3. Increased levels of mother's education were associated with higher odds of out-of-state enrollment regardless of the high school students attended.

4. The impact of counselor interaction on enrollment at any type of in-state institution compared to not enrolling at all appeared to be limited to only those students at WSA participating schools.

5. Honors coursework and high school G.P.A. both were associated with improved odds for high status postsecondary enrollment, regardless of high school type; however, high school G.P.A. appeared to have greater impact on college choice for those in the non-WSA schools, and honors coursework appeared more influential for those in the WSA schools.

Phase Three: The WSA Scholarship and College Choice

While it was important to understand how background characteristics influenced college choice for students in WSA and non-WSA participating schools, a deeper understanding, of college choice for students at participating WSA high schools, was needed. Assuming two students at a WSA participating school were nearly similar in all background characteristics, would they differ in their college choice decisions if one were guaranteed the Achiever's scholarship?

A variable specifying receipt of the Achiever's scholarship was included in the model. The Phase Three model more fully described the effect of receiving guaranteed aid, net of other influential factors, because the sample was limited to only those within WSA participating schools. Results of the Phase Three analysis are described in Table 4.6. The WSA only sample in Phase Two and the Phase Three model included only students from WSA participating schools, thus the only difference between the models was the addition of an Achiever's scholarship variable in Phase Three.

WSA Scholarship Variable. Receiving a WSA scholarship had a statistically significant impact on student enrollment at an in-state university compared to enrollment at out-of-state or two-year institutions, or not enrolling at all. This finding was expected, since WSA program guidelines stipulated that scholarship awardees were to earn a baccalaureate degree from a Washington institution.

Compared to not enrolling at all, receipt of the WSA scholarship increased the odds of enrolling at in-state private and public universities by factors of 37 and 16, respectively. Similarly, the odds of private and public university enrollment were increased by factors of 8 and 4, compared to the choice of enrolling at a community college. If all other background characteristics were equal, the student with a WSA scholarship experienced higher odds of enrolling at baccalaureate-granting institutions.

Given this study's interest in college choice, it was especially interesting to observe the differential impact a WSA scholarship had in terms of choosing an in-state public university compared to an in-state private university. As described above, when compared to choosing an out-of-state or two-year institution, or not enrolling at all, the odds ratios for choosing a private university were always higher than the odds for

Table 4.6 Effects of ethnicity, gender, family background, parental involvement, social networks, academic achievement, and the WSA scholarship on the odds of postsecondary choices. WSA schools only. N=568.

	Pub vs Priv β (e^b)	Sig.	Pub vs Out β (e^b)	Sig.	Pub vs 2 yr β (e^b)	Sig.	Pub vs No β (e^b)	Sig.	Priv vs Out β (e^b)	Sig.	Priv vs 2 yr β (e^b)	Sig.	Priv vs No β (e^b)	Sig.	Out vs 2 yr β (e^b)	Sig.	Out vs No β (e^b)	Sig.	2 yr vs No β (e^b)	Sig.
Ethnicity																				
Black	-0.423 (0.66)		-0.306 (0.74)		0.297 (1.35)		0.172 (1.19)		0.117 (1.12)		0.720 (2.05)		0.594 (1.81)		0.602 (1.83)		0.477 (1.61)		-0.125 (0.88)	
Hispanic	0.118 (1.12)		-0.596 (0.55)		-0.220 (0.80)		-0.291 (0.75)		-0.714 (0.49)		-0.337 (0.71)		-0.409 (0.66)		0.377 (1.46)		0.305 (1.36)		-0.071 (0.93)	
E. Asian	-0.437 (0.65)		-0.604 (0.55)		-0.825 (0.44)		0.040 (1.04)		-0.167 (0.85)		-0.388 (0.68)		0.476 (1.61)		-0.221 (0.80)		0.643 (1.90)		0.864 (2.37)	
O. Asian	0.130 (1.14)		-0.466 (0.63)		-0.585 (0.56)		0.42 (1.52)		-0.596 (0.55)		-0.715 (0.49)		0.290 (1.34)		-0.120 (0.89)		0.886 (2.43)		1.006 (2.73)	**
Nat Amer	-2.388 (0.09)		30.211 NA		-0.682 (0.51)		-0.947 (0.39)		32.599 NA		1.706 (5.51)		1.441 (4.23)		-30.893 NA		-31.158 NA		-0.265 (0.77)	
Gender																				
Female	-1.113 (0.33)		0.466 (1.59)		-0.024 (0.98)		-0.043 (0.96)		1.579 (4.86)	**	1.090 (2.97)	*	1.071 (2.92)	*	-0.490 (0.61)		-0.509 (0.60)		-0.019 (0.98)	
Family																				
Mom Ed.	-0.234 (0.64)		-0.291 (0.57)	**	-0.185 (0.70)		-0.018 (0.97)		-0.058 (0.90)		0.048 (1.10)		0.216 (1.51)		0.106 (1.23)		0.274 (1.69)	**	0.168 (1.38)	*
Home	0.270 (1.31)		0.167 (1.18)		0.733 (2.08)		0.693 (2.00)		-0.104 (0.90)		0.463 (1.59)		0.423 (1.53)		0.566 (1.76)		0.526 (1.69)		-0.040 (0.96)	
Two-par.	-1.084 (0.34)		-0.317 (0.73)		0.020 (1.02)		0.126 (1.13)		0.767 (2.15)		1.104 (3.02)	*	1.210 (3.36)	*	0.337 (1.40)		0.443 (1.56)		0.107 (1.11)	
Siblings	0.118 (1.28)		-0.033 (0.93)		0.032 (1.07)		-0.112 (0.79)		-0.150 (0.73)		-0.086 (0.84)		-0.229 (0.62)		0.064 (1.14)		-0.079 (0.85)		-0.144 (0.74)	*
Par Involv																				
Disc. Ed.	-0.382 (0.68)		0.338 (1.40)		-0.347 (0.71)		-0.182 (0.83)		0.720 (2.06)		0.035 (1.04)		0.201 (1.22)		-0.685 (0.50)		-0.519 (0.59)		0.166 (1.18)	
Indepth	0.011 (1.01)		-0.043 (0.96)		0.714 (2.04)		0.005 (1.01)		-0.054 (0.95)		0.702 (2.02)		-0.006 (0.99)		0.756 (2.13)		0.048 (1.05)		-0.709 (0.49)	
Advice	0.173 (1.19)		-0.366 (0.69)		-0.435 (0.65)		-0.423 (0.66)		-0.538 (0.58)		-0.607 (0.54)		-0.595 (0.55)		-0.069 (0.93)		-0.057 (0.94)		0.012 (1.01)	
Expec.	-0.015 (0.99)		0.361 (1.43)		-0.052 (0.95)		0.437 (1.55)		0.376 (1.46)		-0.037 (0.96)		0.451 (1.57)		-0.413 (0.66)		0.076 (1.08)		0.488 (1.63)	*
Networks																				
Closed	-0.696 (0.50)		-0.457 (0.63)		-0.477 (0.62)		-0.320 (0.73)		0.239 (1.27)		0.219 (1.24)		0.376 (1.46)		-0.020 (0.98)		0.137 (1.15)		0.157 (1.17)	
Peer drop.	1.44 (4.22)		-0.119 (0.89)		-0.579 (0.56)		-0.929 (0.40)		-1.558 (0.21)		-2.018 (0.13)		-2.638 (0.09)		-0.460 (0.63)		-0.811 (0.44)		-0.351 (0.70)	
Peer ex.	0.759 (2.14)		0.556 (1.74)		1.320 (3.74)	***	0.959 (2.61)	*	-0.202 (0.82)		0.561 (1.75)		0.201 (1.22)		0.764 (2.15)		0.403 (1.50)		-0.361 (0.70)	
Peer PSE	-0.592 (0.55)		-0.437 (0.65)		0.405 (1.50)		0.533 (1.70)		0.155 (1.17)		0.997 (2.71)		1.125 (3.08)	*	0.842 (2.32)		0.970 (2.64)		0.128 (1.14)	
Counselor	0.004 (1.02)		0.060 (1.28)		-0.001 (0.99)		0.050 (1.23)		0.057 (1.26)		-0.005 (0.98)		0.046 (1.21)		-0.062 (0.78)		-0.011 (0.96)		0.051 (1.24)	
Achievement																				
Honors	-0.098 (0.91)		-0.236 (0.79)		1.457 (4.29)	***	1.443 (4.23)	***	-0.137 (0.87)		1.556 (4.74)	***	1.541 (4.67)	**	1.693 (5.44)	***	1.679 (5.36)	***	-0.014 (0.99)	
HS GPA	0.710 (1.66)		-0.242 (0.84)		0.963 (1.99)	**	1.252 (2.45)	***	-0.952 (0.51)		0.253 (1.20)		0.542 (1.47)		1.205 (2.37)	**	1.494 (2.91)	***	0.289 (1.23)	
WSA Program																				
Scholarship	-0.830 (0.44)		1.821 (6.18)	***	1.285 (3.61)	***	2.768 (15.93)	***	2.651 (14.17)	***	2.115 (8.29)	***	3.598 (36.53)	***	-0.536 (0.59)		0.947 (2.58)		1.483 (4.41)	***

Pseudo R²	0.267
Log Lik'l'hd	-577.8
Chi Square	420.33

Note: *** p≤.001, ** p≤.01, * p≤.05; β=Coefficient, e^b=factor change in the odds for a unit or St. Dev. increase

NA designates those coefficients which are unreliable as determined by *p* values of 1 and values of 0 or infinity for factor changes in the odds.

choosing a public one, suggesting the scholarship created an opportunity for private

college enrollment which, without the scholarship, was more limited. This conclusion

was further substantiated by comparing the odds of public versus private university

enrollment. Though marginally significant (p=.088), those receiving a WSA scholarship

experienced a more than 100% increase in the odds of private university enrollment

compared to public university enrollment.

Interestingly, the WSA scholarship also appeared to improve the odds of

enrollment at community colleges. Compared to not enrolling in postsecondary education

at all, receiving the WSA scholarship was associated with an increase in the odds of

enrolling at an in-state, two-year institution. Under WSA program requirements,

awardees could begin their postsecondary studies at a two-year institution as long as they

ultimately transferred to a four-year campus to complete their baccalaureate degree.

Other Background, Involvement, and Achievement Variables. Generally speaking,

the addition of the WSA scholarship variable caused little change in the effects of other

background variables. This suggested that the effect of the WSA scholarship was not a

function of other background effects. In analyzing the background effects that *did* change

with the inclusion of the WSA scholarship variable, I shall describe first those instances

where the background effect fell out of significance and then those effects which became

statistically significant.

In the Phase Two model, guidance counselor interaction statistically impacted

three of the college choice comparisons. However, none of these comparisons remained

significant in the Phase Three model. Why did guidance counselor interaction fall out of

significance? One plausible interpretation is that the impact of guidance counselor

interaction was mitigated by the WSA scholarship. It is important to note that the two types of college choice particularly advocated by the WSA program, public and private university enrollment, were the exact types of choice comparisons that fell out of significance when analyzing the impact of guidance counselor interaction. In other words, public and private university enrollment was predicted more fully by WSA participation than by guidance counselor interaction.

The inclusion of the WSA scholarship variable also resulted in measures of family background and family structure becoming significant in Phase Three, whereas they were not significant in Phase Two. In each of these cases, the odds of in-state, public or private university enrollment were significantly improved compared to community college enrollment or not enrolling in any form of postsecondary education. Again, given the WSA program's stated interest to improve baccalaureate achievement, this is not surprising. What is intriguing is that some family background characteristics became significant *after* controlling for the WSA scholarship. This finding suggests that the associations between family life and college choice were subtle enough as to only become statistically significant with a more complex model specification.

Two-parent family status experienced the most significant changes in statistical effect, though it is also worth noting that mother's education, home ownership, and number of siblings experienced marginally significant changes in their impact on college choice. For those living with both their biological mother and father, the odds of enrolling at an in-state private university were improved by a factor of three compared to the odds of enrolling in a community college or not enrolling in postsecondary education at all. Why did these effects only become significant after controlling for the WSA scholarship?

Two assumptions and one fact must be made explicit: first, I assumed the WSA scholarship was not awarded to students based on their family status; second, I assumed the WSA scholarship would have a significant impact on college choice; and lastly, I knew the sample of students was limited to three lower-income high schools within one urban school district.

Now, imagine all the students from the three WSA schools as a basket of apples and oranges. If we want to know the impact of pesticides on these fruit it would be beneficial to separate the apples from the oranges. It may be that pesticides statistically impact both apples and oranges in some meaningful way, but the types of impact may be different. As long as we try to evaluate the affects based on the basket of fruit as a whole, we may never see the distinct ways pesticides affect apples and the distinct ways pesticides affect oranges. Looking at the basket of fruit as a whole is analogous to the analysis run in the WSA only sample of Phase Two.

To simulate the Phase Three model, imagine the whole group of students separated into two sub-groups, the apple group and the orange group, based on whether they received the WSA scholarship. By creating sub-samples, based on a meaningful characteristic, the model was able to discern an association between family status and college choice not apparent in the full sample. It may be that two-parent family status had a statistically significant effect only on those students not receiving the WSA scholarship, though this model is not designed to answer that specific question conclusively.

The results of Phase Three can be summarized by four main points:

1. The measure for receipt of the WSA scholarship had predictable and significant impact on college choice, net of other important background characteristics.

2. The inclusion of the scholarship variable had minimal influence on the impact of other explanatory variables, the following two points excepting:

3. The inclusion of the scholarship variable caused the impact of guidance counselor interaction to fall out of statistical significance.

4. The inclusion of the scholarship variable resulted in the variable for two-parent family status to become statistically significant.

Phase Four: WSA Scholarship and Variable Interaction

The fourth phase of analysis examined the influence of the guaranteed funding component in greater complexity. The WSA Program variable, whether a student received a WSA scholarship, was interacted with the other independent variables. Interaction terms explored the possibility that the effect of the WSA scholarship varied among students with different characteristics.

The addition of interaction terms meant the model consisted of twice as many variables as it did in the previous models. Because of the limitations associated with specifying a large number of independent variables, while using a modest sample size (n=568), some of the coefficients could not be determined by the model and some of the factor changes in the odds were unreliably large or small.

While additional limitations were associated with the reliability and validity of the Phase Four findings, some of the findings suggested important nuances regarding the impact of the WSA scholarship and merit discussion (see Table 4.7).

Overall, coefficients and significance levels for the main effects were similar to the Phase Three model (main effects refer to the model's main variables, not the interaction terms). One interesting and significant difference between Phases Three and Four related to the characteristics associated with increased odds for private university enrollment. In the previous model, a female advantage was associated with increased odds for enrolling in private universities, compared to other postsecondary choices. When interaction terms were added to the model, the female advantage for private university enrollment disappeared. A similar private university advantage had previously been associated with those students who lived with both their biological mother and father and those students who reported that more than half of their friends had taken a college entrance exam. Like the female advantage, the two-parent family and prepared peer-group advantage for private university enrollment disappeared after expanding the model to include interaction terms.

Another difference between Phases Three and Four was a change in the statistical impact of having regular in-depth discussions with parents. Unlike the results in Phase Three, the expanded model suggested that students who regularly had in-depth discussions with their parents experienced a decrease in the odds of enrolling at community colleges, compared to public universities, out-of-state institutions and not enrolling in any postsecondary education. Surprisingly, students reporting regular in-depth discussions with their parents had higher odds of not enrolling at any type of

Table 4.7 Effects of background variables and WSA interactions on odds of postsecondary choice. WSA schools only. N=568.

	Pub v. Priv	Pub v. Out	Pub v. 2 yr	Pub v. No	Priv v. Out	Priv v. 2 yr	Priv v. No	Out v. 2 yr	Out v. No	2 yr v. No
	β (e^b) Sig	β (e^b) Sig	β (e^b) Sig	β (e^b) Sig	β (e^b) Sig	β (e^b) Sig	β (e^b) Sig	β (e^b) Sig	β (e^b) Sig	β (e^b) Sig
Ethnicity & Gender										
Black	-1.453 (0.23)	-0.876 (0.42)	-0.556 (0.57)	-0.368 (0.69)	0.576 (1.78)	0.897 (2.45)	1.085 (2.96)	0.32 (1.38)	0.509 (1.66)	0.188 (1.21)
Hispanic	20.58 NA	-1.126 (0.32)	-1.503 (0.22)	-1.441 (0.24)	-21.7 NA	-22.08 NA	-22.02 NA	-0.377 (0.69)	-0.315 (0.73)	0.062 (1.06)
E. Asian	-0.309 (0.73)	-1.058 (0.35)	-1.588 (0.2)	-0.592 (0.55)	-0.749 (0.47)	-1.279 (0.28)	-0.282 (0.75)	-0.53 (0.59)	0.466 (1.59)	0.996 * (2.71)
O. Asian	-1.362 (0.26)	-0.058 (0.94)	-1.237 (0.29)	-0.182 (0.83)	1.304 (3.68)	0.125 (1.13)	1.18 (3.26)	-1.179 (0.31)	-0.124 (0.88)	1.055 ** (2.87)
Nat Amer	18.54 NA	33.72 NA	-0.17 (0.84)	-0.277 (0.76)	15.19 NA	-18.71 NA	-18.81 NA	-33.89 NA	-34.00 NA	-0.106 (0.9)
Female	-1.452 (0.23)	0.119 (1.13)	-0.427 (0.65)	-0.561 (0.57)	1.571 (4.81)	1.024 (2.79)	0.89 (2.44)	-0.546 (0.58)	-0.68 (0.51)	-0.134 (0.87)
Family & Involvement										
Mom Ed.	-0.132 (0.78)	-0.259 (0.61)	-0.178 (0.71)	-0.022 (0.96)	-0.127 (0.78)	-0.046 (0.92)	0.11 (1.24)	0.08 (1.17)	0.237 * (1.58)	0.157 * (1.35)
Home	-0.065 (0.94)	-0.21 (0.81)	0.324 (1.38)	0.387 (1.47)	-0.14 (0.87)	0.389 (1.48)	0.452 (1.57)	0.529 (1.7)	0.592 (1.81)	0.063 (1.07)
Two-par.	-1.301 (0.27)	-0.298 (0.74)	0.038 (1.04)	0.165 (1.18)	1.003 (2.73)	1.339 (3.82)	1.465 (4.33)	0.336 (1.4)	0.462 (1.59)	0.126 (1.13)
Siblings	0.234 (1.63)	-0.081 (0.85)	-0.08 (0.85)	-0.215 (0.64)	-0.315 (0.52)	-0.314 (0.52)	-0.449 (0.39)	0.001 (1.0)	-0.134 (0.76)	-0.14 (0.75)
Disc. Ed.	-1.496 (0.22)	0.179 (1.2)	-0.762 (0.47)	-0.682 (0.51)	1.675 (5.34)	0.734 (2.08)	0.815 (2.26)	-0.941 (0.39)	-0.86 (0.42)	0.08 (1.08)
Indepth	1.052 (2.86)	0.492 (1.63)	1.826 * (6.21)	0.869 (2.39)	-0.56 (0.57)	0.774 (2.17)	-0.183 (0.83)	1.334 (3.8)	0.377 (1.46)	-0.957 * (0.38)
Advice	-0.217 (0.81)	-0.776 (0.46)	-0.689 (0.5)	-0.76 (0.47)	-0.559 (0.57)	-0.472 (0.62)	-0.543 (0.58)	0.087 (1.09)	0.016 (1.02)	-0.07 (0.93)
Expec.	-1.431 (0.24)	-0.044 (0.96)	-0.589 (0.55)	-0.052 (0.95)	1.387 (4.0)	0.842 (2.32)	1.379 (3.97)	-0.545 (0.58)	-0.007 (0.99)	0.537 * (1.71)
Networks										
Closed	-0.318 (0.73)	-0.437 (0.65)	-0.605 (0.55)	-0.377 (0.69)	-0.119 (0.89)	-0.287 (0.75)	-0.059 (0.94)	-0.168 (0.85)	0.06 (1.06)	0.228 (1.26)
Peer drop.	198.7 NA	0.227 (1.25)	0.341 (1.4)	-0.175 (0.84)	-198.5 NA	-198.3 NA	NA NA	0.114 (1.12)	-0.401 (0.67)	-0.52 (0.6)
Peer ex.	0.902 (2.47)	0.85 (2.34)	1.591 ** (4.91)	1.415 * (4.12)	-0.052 (0.95)	0.688 (1.99)	0.513 (1.67)	0.74 (2.1)	0.565 (1.76)	-0.176 (0.84)
Peer PSE	-0.321 (0.73)	-0.545 (0.58)	0.539 (1.71)	0.519 (1.68)	-0.223 (0.8)	0.86 (2.36)	0.84 (2.32)	1.083 (2.95)	1.063 (2.9)	-0.02 (0.98)
Counselor	-0.027 (0.9)	-0.044 (1.2)	-0.032 (0.88)	-0.025 (1.11)	0.07 (1.34)	-0.005 (0.98)	0.052 (1.24)	-0.075 (0.73)	-0.019 (0.93)	0.056 (1.26)
Achievement & WSA										
Honors	-0.066 (0.93)	0.231 (1.26)	1.907 ** (6.73)	2.132 *** (8.43)	0.296 (1.34)	1.972 (7.19)	2.197 * (9.0)	1.676 ** (5.35)	1.901 *** (6.69)	0.225 (1.25)
HS GPA	0.473 (1.4)	-0.192 (0.87)	1.345 ** (2.62)	1.585 *** (3.11)	-0.666 (0.62)	0.872 (1.86)	1.112 (2.22)	1.538 *** (3.01)	1.777 *** (3.57)	0.24 (1.19)
WSA Schol.	-4.491 (0.01)	14.87 NA	1.065 (2.9)	3.194 (24.38)	19.36 NA	5.556 (258.7)	7.685 NA	-13.81 NA	-11.68 NA	2.129 (8.41)
Blk x WSA	2.283 (9.81)	-2.81 (0.06)	2.879 * (17.81)	-0.098 (0.91)	-5.093 (0.01)	0.597 (1.82)	-2.381 (0.09)	5.689 '(295.7)	2.712 (15.05)	-2.978 ** (0.05)
Fem x WSA	0.546 (1.73)	2.573 (13.11)	0.985 (2.68)	1.838 + (6.29)	2.027 (7.59)	0.439 (1.55)	1.292 (3.64)	-1.588 (0.2)	-0.735 (0.48)	0.853 (2.35)
Exp x WSA	2.561 * (12.95)	0.12 (1.13)	1.307 (3.7)	1.037 (2.82)	-2.441 (0.09)	-1.254 (0.29)	-1.524 (0.22)	1.187 (3.28)	0.917 (2.5)	-0.27 (0.76)

Pseudo R²: 0.326   Log Lik'l'hd: -531.3   Chi²: 513.3

Note: *** p≤.001, ** p≤.01, * p≤.05, + p≤.10; β=Coefficient, e^b=factor change in the odds for a unit or St. Dev. increase

NA designates coefficients which are unreliable as determined by *p* values of 1 and/or values approaching 0 or ~ for the odds ratios.

Only interaction terms that were significant with reliable odds ratios were included in the table.

postsecondary education than enrolling at community colleges. Further exploration and evaluation of this particular finding would be beneficial to our understanding of the associations between various forms of parental involvement and college choice.

In addition to differences in main effects, some important interaction effects also emerged. After controlling for background and achievement characteristics, African American students, who were also WSA scholarship recipients, demonstrated improved odds for enrolling at public universities over community colleges, when compared to their White classmates. This finding would seem to indicate the WSA program met one of the stated program objectives, that being to provide baccalaureate opportunity to those students traditionally underrepresented in baccalaureate degree-granting institutions.

A second important interaction effect related to gender. As described above, no significant main effects emerged for females in Phase Four. One noteworthy interaction effect, however, did emerge. In comparison to male scholarship recipients, female scholars experienced an increase in the odds of public university enrollment, compared to not enrolling at all. The WSA scholarship, therefore, appeared to have a more powerful impact on female, compared to male, recipients.

Students who reported having regular in-depth conversations with their parents were associated with increased odds of public university enrollment, compared to community college enrollment. On the other hand, a significant and negative coefficient for the related interaction term suggested that this advantage did not apply to WSA scholarship recipients. Stated differently, in-depth student-parent discussions did not appear to explain the variance in college choice among those students who received the WSA scholarship. This was meaningful because it suggested the WSA program could

positively influence college choice, notwithstanding various levels of parental involvement.

A similar finding related to students who were awarded the WSA scholarship and who had taken honors coursework in high school. Students who passed at least one credit of honors coursework in high school were associated with increased odds of enrolling at in-state universities compared to not enrolling in postsecondary education at all. The positive effect of honors coursework on college choice, however, did not apply to WSA scholarship recipients. Like in-depth discussions, honors coursework did not appear to explain the variance in college going for WSA Scholars.

While no significant main effects were associated with students who felt their families had always expected them to go to college, the interaction of postsecondary expectations with the WSA scholarship did impact college choice. Students who received the WSA scholarship and who had always felt an expectation to go to college experienced an increase in the odds of enrolling at in-state public universities compared to in-state private universities.

The final difference between the Phase Three and Phase Four analyses was associated with the WSA scholarship variable. In Phase Three, receipt of the WSA scholarship was associated with increased odds of enrolling at in-state universities compared to out-of-state institutions, two-year institutions, or not enrolling at all. After including the interaction terms in the model, all of the WSA scholarship effects fell out of significance.

Given the strength of the scholarship effect in the Phase Three model, one would have expected similar strength in the main effect and/or interaction effects in the Phase

Four model. This was not the case. All the positive and significant associations in the main effect fell out of significance and only a handful of the interaction terms generated significant associations.

Did this mean the WSA scholarship demonstrated no significant impact on college choice? Not at all. This further supported the claim that the complex model and relatively small sample size limited the explanatory power of the results. Notwithstanding the limitations of the fourth analysis phase, the nuanced outcomes experienced by African American and female scholarship recipients suggested an intriguing finding worthy of further exploration.

Collectively, the results from the statistical analyses provided an abundance of data to more fully shape our understanding of the students from one urban-Washington community and the impact a guaranteed funding program had on their postsecondary choices. Chapter Five will synthesize the statistical findings and draw conclusions about the impact of the WSA scholarship on college choice. Finally, the important themes gathered from these analyses will be situated within our current understanding of college choice.

Chapter Five
Discussion and Conclusion

This study began with two rather simple questions. First, how would a guaranteed funding program, like the Washington State Achievers (WSA) program, influence postsecondary enrollment among those populations traditionally underrepresented in higher education? And secondly, would guaranteed grant aid influence the type of postsecondary institution at which underserved students enrolled? Briefly stated this study explored issues surrounding college access *and* college choice.

Inasmuch as postsecondary choices occur within a situated context for each individual, the theoretical concepts of human and social capital provided the conceptual framework for this research. Specifically, this study attempted to evaluate the impact of the WSA program and its potential for shaping if students went to college and where they chose to enroll. To substantiate claims about impact, I specified multinomial logistic regression models. The structure of these statistical models drew heavily on the status attainment, balanced access, college choice, and student-choice conceptual models. Ultimately, I assumed high school students made rational choices about what to do after high school, given their own individualized social contexts, perceptions of opportunity, and economic constraints.

Results from the analysis suggested that the WSA program was effective at not only improving postsecondary opportunity generally, but in expanding the types of opportunities available to those traditionally underrepresented in higher education. Four key findings were identified and will be discussed throughout the remainder of this chapter:

1. The WSA scholarship improved access to higher education.

2. The WSA scholarship positively influenced college choice by improving the odds of enrolling at four-year institutions compared to two year community colleges.

3. The WSA scholarship seemed particularly effective at improving postsecondary opportunity for African Americans.

4. The WSA scholarship seemed particularly effective at improving postsecondary opportunity for women.

Discussion of Key Findings

The WSA scholarship and access. Even after controlling for background characteristics, social capital, and academic achievement, receipt of the WSA scholarship was associated with increased odds of enrollment at postsecondary institutions. Specifically, the odds of enrolling at in-state universities and two-year community colleges, compared to not enrolling at all, were statistically higher for those in receipt of a WSA scholarship (see Table 4.6).

A recent study by Sedlacek and Sheu (2006) substantiated the findings presented here, regarding the impact of the WSA program on improved postsecondary access. Sedlacek and Sheu (2006) surveyed WSA scholars who were enrolled at institutions of higher education and asked them how important the WSA scholarship was to enrollment at their chosen institution. Irrespective of gender, or type of institution attending, the respondents responded affirmatively that the WSA scholarship was critical to their college and university enrollment.

The impact of the WSA scholarship on improved postsecondary access seems even more noteworthy when considering the population of students the program aims to

serve. The high schools participating in the WSA program were largely comprised of low-income, ethnic minority, and first-generation college going students; the same populations traditionally shut out from postsecondary institutions (Hamrick & Stage, 2004). However, as Emeka and Hirschman (2006) discovered, "(The Washington State Achievers program) has made college attendance a real possibility for large numbers of low-income students" (p. 205).

The WSA scholarship and college choice. Beyond issues of college access, the WSA program also had a statistically positive impact on college choice (see Table 4.6). Net of other important postsecondary predictors, receipt of the WSA scholarship was associated with improved odds for enrollment at four-year institutions, compared to two-year community colleges. In fact, the odds of enrolling at an in-state public university, compared to a two-year institution, increased by a factor of 3.6 for WSA scholars. When comparing in-state private university enrollment to two-year institutions, the odds of university enrollment increased by a factor of 8.3 for WSA scholars. In both of these cases, the impact of the WSA scholarship on college choice was substantial.

A thorough examination of postsecondary equity must of necessity evaluate college choice. Where students enroll in postsecondary education significantly impacts future earning potential and postsecondary opportunity (Day & Newburger, 2002). Unfortunately, those traditionally underrepresented in higher education have historically been overrepresented on two-year campuses (Bailey, 2002). This suggests that students from low-income homes or ethnic minority backgrounds are less likely than their ethnic majority and high income peers to enroll at four-year colleges and universities (Paulsen & St. John, 2002). Notwithstanding the postsecondary disadvantages historically faced by

the underrepresented, the WSA scholarship appeared to drastically improve the opportunity for four-year enrollment.

These findings regarding college choice are consistent with St. John and Hu's (2006) evaluation of the Washington State Achievers program. In addition, other recent studies have demonstrated a positive association between need based financial aid and four-year college enrollment. In their study of college choice using the NELS 1992 cohort, Perna and Titus (2004) reported that need based aid provided greater opportunity to low-income students for four-year enrollment; furthermore, need based aid was particularly effective at promoting private university enrollment.

The WSA scholarship and African American recipients. The WSA program sought to improve four-year graduation rates for those traditionally underrepresented. Given this programmatic objective, this study was designed specifically to evaluate the impact of the WSA scholarship on student populations traditionally marginalized. Interestingly, African American and female recipients appeared to gain the most from receipt of a WSA scholarship, compared to their White and male classmates (see Table 4.7).

After controlling for the previously mentioned background, social, and achievement characteristics, African American scholarship recipients enjoyed statistically better odds than White scholarship recipients of enrolling at an in-state public university compared to an in-state two-year community college. Stating this another way, two scholarship recipients with seemingly identical characteristics, except race, would both experience greater postsecondary opportunity as a result of their WSA scholarship. Compared to the White student, however, the African American student would

experience the more substantial impact on public university enrollment, when compared to community college enrollment.

The more pronounced impact of the WSA scholarship on African American recipients is not necessarily unexpected. St. John, Paulsen, and Carter (2005) determined that, "African Americans were highly sensitive to finances in their college choices," and "tuition and student aid played a substantial role in the college choice process for African Americans" (p.564). Clearly, the WSA scholarship's coverage of tuition and fees at in-state, public universities had a positive impact on African Americans' college choice process, to a degree even greater than that experienced by the White majority.

The WSA scholarship and female recipients. Female scholarship recipients also experienced an advantage in postsecondary opportunity. Compared to male scholarship recipients, female scholarship recipients enjoyed greater odds of in-state public university enrollment, compared to not enrolling at all (this particular finding was marginally significant: $p=.064$). Why would female scholarship recipients be associated with an additional postsecondary advantage beyond that even experienced by male scholarship recipients?

It is not possible to definitively explain the apparent female advantage. Future research is needed to more fully understand why the effect of guaranteed grant aid would differentiate between males and females. Until then, it is interesting to consider other studies that have reported female advantages in postsecondary opportunity.

In his analysis of postsecondary enrollment decisions based on gender, race, family income, and location of residence, Nelson (2003) found that urban females were more likely than urban males to enroll in postsecondary education. This advantage

persisted across all racial/ethnic groups and most family income levels. Inasmuch as the

current study also focuses on college going decisions within an urban context, perhaps

the female advantage identified by Nelson (2003) includes such things as differential

effects between female and male recipients of guaranteed aid.

As cited previously, Emeka and Hirschman (2006) were interested in better

understanding the characteristics of students who applied for the WSA scholarship and

those actually awarded the scholarship. Surprisingly, their investigation found that

females were not only more likely to apply for the WSA scholarship, but were more

likely to receive the award.

There is some indication, therefore, that females were more active in seeking out

the WSA scholarship than were their male classmates. Additionally, recent history

suggests urban females have been more likely than urban males to enroll in higher

education. Whether the findings from these additional studies provide some of the clues

as to why female scholarship recipients experienced greater odds for public university

enrollment is a line of inquiry worthy of continued study.

Before discussing the implications of these findings on postsecondary policy and

research, it is important to note one potential limitation to the claims just reported.

Because school reform had not occurred at the time students completed the UWBHS

survey, the assumption is the WSA scholarship is responsible for improvements in access

and choice. It is possible, however, that elements of the grant related to social capital,

including mentoring, or cultural capital, including changes in habitus as a result of

campus tours, were responsible for the encouraging findings. Ultimately, this study is

unable to completely untangle the potential effects of guaranteed grant aid, mentorship, and motivation.

Implications for Policy and Research

Beyond describing the impact of the WSA scholarship on its recipients, this study was also interested in determining how these findings might inform the development of postsecondary public policy and the field of postsecondary research. The findings of this study contribute to our understanding of early intervention programs, suggesting that later interventions and guaranteed need based aid can effectively improve postsecondary opportunity. Additionally, in light of current postsecondary policies related to affirmative action, our understanding of postsecondary intervention programs has become even more critical. Finally, the findings presented here support the use of certain modeling techniques which may inform future methodological approaches to postsecondary research.

As described in Chapter One, it has become customary for postsecondary intervention programs to begin as early as the seventh or eighth grade, thereby warranting the label, "early intervention." The WSA program is noticeably different in that participants are not informed of their inclusion in the program until the middle of their junior year. Many have wondered if the junior year is too late to impact postsecondary choice. Hossler, et al. (1999), for example, believed early intervention programs should start as early as the eighth or ninth grade.

One important finding from this study, therefore, is that intervention as late as the junior year in high school can have a dramatic impact on college choice. It may be that some benefits are gained by waiting until students are older before implementing

educational interventions. For one thing, students may have a more developed sense of self and the salience of postsecondary choices may increase the motivation to engage in the intervention.

On the other hand, arguments against late interventions still exist. Students who drop out of school may never have the opportunities provided by late intervention programs, while for others, academic identities may be too deeply ingrained to facilitate positive educational change at such a late juncture. The question for subsequent studies, therefore, is whether earlier or later interventions impact the most students and have the most pronounced effects.

Another implication for public policy relates to the types of interventions available to students. In earlier chapters, I reviewed the current debate over the importance of grant aid in postsecondary opportunity. Some feel that preparing students academically, through college preparatory coursework, is the most critical objective for postsecondary intervention. Others believe the lack of guaranteed aid too often makes college preparation inconsequential for the low-income.

This debate also centers around the types of financial aid considered most beneficial. Some would suggest that student loan programs are the most efficient policy approaches while others believe need based aid in the form of grants or scholarships has the greatest impact on improving postsecondary equity. Research indicates that grant and scholarship aid, not loans, have a larger effect on postsecondary opportunity for those traditionally underrepresented (Heller, 1997; Mumper, 1996; St. John, 2002a).

While we can't predict the type of impact the WSA program would have had as a student loan program, we do know how it impacted postsecondary opportunity in the

form of a need based scholarship. The findings from this study were clear; the WSA scholarship had a significant and positive impact on postsecondary opportunity. Studies like this one further suggest that guaranteed funding in the form of grant or scholarship money should continue to be a critical policy agenda for creating greater equity in postsecondary enrollment. In their recent evaluation of the WSA program, St. John and Hu (2006) also found a significant relationship between guaranteed grant aid and postsecondary preparation and echoed the call for policy makers at the state and federal levels to address the need for increased levels of grant aid.

Governmental and philanthropic intervention efforts appear even more important in today's judicial environment. Recent judicial decisions forbidding affirmative action policies in postsecondary admissions directly impact postsecondary opportunity (Supreme Court of the United States, 2003). Prior to the Gratz v. Bollinger decision, affirmative action assisted those from underrepresented populations who demonstrated motivation to apply to postsecondary institutions.

Generally, those from underrepresented populations have access to lower levels of social and cultural capital than their white and middle class neighbors. These very forms of capital significantly influence the degree to which one is able to persuasively convey a sense of capability and belonging to high status individuals like university admission's committees. Motivated and capable students can be passed over in the admissions process in favor of students with higher levels of social and cultural capital simply because those with higher levels of social and cultural capital are more likely to effectively communicate their case for admission. Those with higher levels of social and cultural capital are more likely to submit a highly polished application with references to

volunteer work and desired life-long learning, communicative approaches representative of higher levels of social and cultural capital. Affirmative action was established, in part, to hold the door of social opportunity open for motivated and capable students, even if the student was less skillful in the art of admission's applications.

In many respects, the WSA program has potentially addressed the same challenge. Like affirmative action, the WSA program assists those who are highly motivated in their desire to achieve a postsecondary education. In addition to the guaranteed grant money, the WSA program also assists students through mentorship and workshop activities. These latter activities are explicitly designed to mitigate inequities based on levels of social and cultural capital.

Given the relationship between affirmative action, the WSA program, and levels of social and cultural capital, it is interesting to consider the findings of this study as they relate to African American and female scholarship recipients. It is possible, that like affirmative action, the WSA program is most effective for those disadvantaged populations that collectively have the highest level of available social and cultural capital, in other words the most advantaged of the disadvantaged. This point is substantiated by the fact that only those high school students who persist to their junior year in high school are even eligible for the WSA scholarship. Even among those who will graduate from high school, it may be that the most disadvantaged are not in a position to benefit from the WSA program to the same degree as the African American and female students of this study. For one thing, students with at least some access to social and cultural capital will be more capable of articulating a motivation to achieve a college degree.

Ultimately, it seems that programs like the WSA program will serve a similar purpose as affirmative action in college admissions. Those in a position to benefit most from the WSA program are generally those most advantaged among the disadvantaged. This population should not be construed, however, with those in society possessing vaults full of power and privilege. Limited levels of social and cultural capital limit opportunities for the WSA scholarship recipients on a daily basis. But, there is indication the WSA program assists these capable and motivated students by holding open the door into academe, much like affirmative action once did.

In addition to this study's implications for public policy, there are potential implications for future postsecondary research. Though much less prevalent than logistic regression models, multinomial logistic regression models are appropriate tools for evaluating issues of college access and college choice and their use is becoming more conventional. St. John and Hu (2006), for example, specified a number of multinomial logistic regression models in their evaluation of the WSA program.

Many quantitative studies of postsecondary equity are inherently interested in multiple postsecondary outcomes. In cases like this, multinomial logistic regression modeling is an effective and statistically sound method for analyzing the data. This study demonstrated the appeal of a multinomial logistic regression approach to understanding some of the nuanced decision making associated with college choice.

On the other hand, this study also demonstrated that multinomial logistic regression models are not without their challenges. First and foremost are the difficulties associated with smaller sample sizes and large numbers of independent variables. When degrees of freedom are overly restricted, the coefficients generated by a multinomial

logistic regression often become unreliable. Clearly, not all data sets and studies lend themselves to this type of modeling; however, this study is one of a growing number of projects that encourage the use of a multinomial logistic regression approach when quantitatively studying postsecondary opportunity.

The final implication for future postsecondary research refers to the actual variables included in this study. The independent variables were included because of their reliability in previous studies and their availability within the given data set. Given the study's theoretical and conceptual context and the historical rationale for including these variables, it would be easy to justify, without evaluation, the presence of these variables in the model. In fact, upon a careful evaluation, these measures did appear to be appropriate controls in a model for college choice.

The degree of correlation between the measures was generally limited; therefore, the assumption that the variables were truly independent held. Secondly, the findings from the Phase Two full sample model suggested that nearly all the variables were statistically significant predictors of postsecondary choice, meaning their inclusion assisted the model in explaining the variance associated with college choice. It appears a model of college choice that includes a complex interaction of background, social, cultural, and achievement influences is an appropriate quantitative approach to postsecondary opportunity research. Notwithstanding the positives associated with this model, important and inherent challenges confront the use of social capital proxies.

Revisiting Social Capital Theory

While the statistical methodology employed in this study is harmonious with generally accepted practices, it is important to question the assumptions inherent in the

method. One underlying assumption of this study is that the model appropriately controlled for human and social capital. But, did it? As Kao (2004) suggests, claiming reliable measures of social capital is an onerous task, especially when one's sample includes diverse populations.

The variables included in this study as proxies for socioeconomic status and academic achievement (measures of human capital), while not perfect, seem appropriate given the available data. The more challenging question relates to the proxies for social capital: do the variables employed adequately represent the degree of social capital available to each student?

Kao (2004) provides a useful framework for evaluating the reliability and appropriateness of social capital proxies. First, she suggests dividing social capital into two types: potential and actualized. Secondly, Kao claims the actualized power associated with social capital lies in the interaction between potential and level of intensity. Most empirical measures of social capital are merely proxies for potential levels of social capital. For proxies to more appropriately measure actual levels of social capital, the data must assume an understanding about the intensity of the measured social interaction.

The use of social capital variables in this study is no different than most quantitative studies. Measures for two-parent families, number of siblings, closed networks, peer relationships, and counselor interaction all lack understanding about the intensity of social capital availability. For example, two-parent families may provide greater levels of social capital because parents have the wherewithal to bestow more attention on their children. On the other hand, one-parent homes may forge close knit

bonds as the family unifies to overcome life's demands. Without greater knowledge about each individual situation, it is difficult to claim which home will provide the greater level of social capital. In this example, the two-parent variable becomes a measure of potential social capital, not actual social capital.

Interestingly, measures in this study associated with parental involvement were the least predictive of post-secondary choice but perhaps the most indicative of actual social capital. The parental involvement proxies all inquired about the qualitative nature of parent-child interaction thereby assuming an understanding of both social capital potential and intensity.

The general lack of statistical significance associated with the parental involvement variables appears to result from variable unreliability more than it does from a new and insightful understanding of social capital. In one example, participants were asked to identify the degree to which they felt comfortable going to their parents for advice. About what type of advice is this question asking? What exactly does it mean to be comfortable going to one's parents? What's the difference between agree and strongly agree? All of these questions suggest a potential for unreliable responses, especially among a highly diverse sample of participants.

These criticisms of social capital proxies should not diminish the findings associated with the guaranteed grant component of the Washington State Achievers program. While it is not clear whether the social capital proxies adequately approximated the degree of social capital available to each student, the proxies did control for important background, family, and peer characteristics traditionally thought influential in matters of educational achievement and associated with social capital theory.

Until we better understand how to quantitatively measure actual social capital, proxies for potential social capital may still be effective as background controls. Finally, the criticisms of social capital proxies presented here further commend the use of qualitative approaches to better understand social capital, especially in determining appropriate methods for measuring actual levels of social capital.

Conclusion

Given the increasing importance of a college education and the perpetual inequity which plagues postsecondary opportunity in the United States today, continued research on college access and choice is essential. This study has contributed to our understanding of postsecondary opportunity and the impact of a guaranteed funding program on postsecondary choice, but additional questions about the most effective types of policy interventions are yet to be answered.

Further study is needed to evaluate how early intervention programs can assist high school dropouts. Students who drop out without earning a high school diploma represent a large population of youth not examined in the sample of this study. Additionally, research that explores the accessibility of cultural and social capital within a school environment will better inform our understanding of the postsecondary effects associated with school reform.

Finally, qualitative studies aimed at understanding the college choice process, in light of a guaranteed aid component, will improve our ability to dissect outcomes linked specifically to individual components of the policy program. For example, what aspects of the WSA program most influenced recipients' college choices? And, why did the WSA scholarship have such a substantial impact on four-year university enrollment?

Answers to these questions cannot be explored through a quantitative analysis like the one reported here; however, future qualitative endeavors may shed light on the subtleties inherent in questions such as these.

We live in an age when we must actively seek to promote equity in the acquisition of education. Education has long been the gateway to societal opportunity, but for too long only a privileged few have had access to the key. In the United States, ethnic minorities, first-generation students, and the low-income have not been privileged with the same academic opportunities as their wealthier and ethnic-majority counterparts. Recent history suggests that federal and state governments, private foundations, and postsecondary institutions have engaged in a myriad of efforts to mitigate educational inequities, some with positive and others with negative results.

This study reminds us that public policy has the capacity to influence, in a meaningful and significant way, who goes to college *and* where they enroll. It is critical, therefore, that the research informing postsecondary policy development be trustworthy and derived from methodologically sound analyses.

The Washington State Achievers Program is a unique private attempt to improve four-year college graduation rates among those least represented in college. It is an ambitious effort that appears to be working. As a result of the WSA scholarship, hundreds of high school graduates who might not otherwise have been able to attend college, particularly a four-year university, are on the path to a higher education and hopefully a better quality of life. Indeed, the WSA program represents a substantial advancement in our search for postsecondary equity.

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ACADEMIC PRESENTATIONS:

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June, 2006	Office for Professional Development Transformer Award for innovative and strategic work.
November, 2005	Nominated, K. Patricia Cross Future Leaders Award.
2002-2004	Spencer Foundation Fellowship, the Discipline Based Scholarship in Education Training Program.
1998-1999	Graduate Laurels Scholarship, Oregon State University.

MEMBERSHIPS:

2002-present	Association for the Study of Higher Education
2004-present	Professional and Organizational Development Network in Higher Education
2005-present	National Association of Student Personnel Administrators