

DEBT-FOR-DIPLOMA: AN EXAMINATION OF STUDENT LOAN BORROWING AND
INDEBTEDNESS AMONG 2007-08 BACHELOR'S DEGREE GRADUATES

By

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To my family

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Abstract of Dissertation Presented to the Graduate School
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This study examined the probability of borrowing and cumulative levels of student loan debt among America's 2007-08 bachelor's degree graduates. The data source for this study was the 2008 National Postsecondary Student Aid Study conducted by the National Center for Education Statistics. An adapted version of Perna's (2006a) proposed model of college choice was utilized as a conceptual framework to guide this study. This model offered a new theoretical approach to the study of student loan borrowing and indebtedness.

Descriptive statistics, t-tests, ANOVAs, and multivariate regression techniques were used to examine the individual, familial, and institutional factors associated with students' loan borrowing behavior. Overall interpretation of the results suggests that students' demographic characteristics, social and cultural capital, supply of financial resources, and postsecondary institution type were strongly associated with the probability of borrowing and cumulative level of student loan debt. Bachelor's degree graduates with the highest levels of loan debt burden were more likely to be female, Black, independent, and have higher levels of unmet financial need after receiving all grant aid. In addition, students who demonstrated poorer academic

performance and graduated from private postsecondary institutions were more likely to borrow and have higher levels of loan debt.

Findings from this study highlight the importance of providing students, and their families, with pertinent information about the costs and benefits of borrowing through student loans to finance their college education. Financial literacy programs and better financial aid counseling could help students acquire the knowledge and financial management skills they need to make informed decisions about using student loans. Furthermore, results corroborate the need to increase the amount of grant aid available to college students and reduce the financial hardships of graduates who leave higher education with high levels of outstanding student loan debt.

Promisingly, President Barack Obama signed a new student loan reform bill into law in March 2010 that has the potential help assuage the skyrocketing levels of indebtedness among recent college graduates. The implications of this study are discussed in light of this new federal legislation and recommendations are made to help strengthen future research related to student loan borrowing. Collectively, findings from this study can better inform public policies and institutional practices aimed at protecting today's college students from acquiring unmanageable debt burden.

CHAPTER 1 INTRODUCTION

The level of indebtedness among America's recent bachelor's degree graduates is unprecedented. The average student loan debt for graduating seniors has nearly tripled since 1990, with the average debt at \$23,200 for borrowers who graduated during the 2007-2008 academic year (National Postsecondary Student Aid Study [NPSAS], 2008). In addition, more students are borrowing today than ever before to cover the escalating costs associated with earning a bachelor's degree. Approximately two-thirds of all bachelor's degree recipients graduated with federal and/or private education loan debt in 2008 (NPSAS, 2008). A growing percentage of these students are borrowing at levels placing them at greater risk for loan default or even bankruptcy after graduation. In 1993, only 1% of graduating seniors had borrowed \$40,000 or more in student loans to pay for college. The proportion of all bachelor's degree graduates borrowing in excess of \$40,000 had risen to 10% by 2008 (NPSAS, 2008).

Students' increased reliance on loans to pay for college represents a shift from the public to private financing of higher education in the United States (Heller & Rogers, 2006). As tuition rates have increased rapidly within the last two decades and governmental financial support for higher education has decreased, individuals have been forced to pay a greater share of the total costs of attending college. As a direct result, higher education has become less affordable for a growing number of students and their families (Price, 2004a). Many students are left with no choice but to borrow through loans in order to bridge the gap between their available resources and the escalating costs associated with earning a college degree. Consequently, college student indebtedness has drawn widespread attention in the media and public policy debates (Gladieux & Perna, 2005) and has been identified as an impending national crisis (Carey & Dillon, 2009).

The past two decades have brought about dramatic shifts in how students and their families pay for college. Student loans have become the central component of America's financial aid system and have replaced grants as the dominant source of student financial aid in the United States (Dowd, 2008; Heller & Rogers, 2006). Education loans offered through the federal government are now the primary source of funding that undergraduates use to finance their college education. During the 2007-08 academic year, federal loans accounted for 45% (\$56.5 billion) of all financial aid delivered to undergraduates (College Board *Trends in Student Aid*, 2009). Borrowing through the federal student loan programs has simply become part of the college experience for the majority of America's undergraduates.

A growing number of students are also relying on private, or alternative, loans to pay for college. Private loans are typically provided through a bank or private lending agency and have less favorable terms than federal student loans. Unlike private loans, student loans delivered through the federal government are guaranteed and carry a fixed interest rate. For the 2008-09 academic year, the interest rate was 6% for newly originated subsidized federal loans to undergraduate students. In contrast, private loans are not guaranteed by the government and there are no limits on the interest rates and fees that private lenders can charge. Some private lenders have variable rates on student loans as high as 19% (Block, 2006).

In 1997-98 private loans represented 7% of all education loans, but by 2007-08 private loans accounted for 23% of the total loan volume (College Board *Trends in Student Aid*, 2008). The most recent data from the College Board (2009) suggest that private loans had declined to approximately 13% of total borrowing in 2008-09. Students who acquire private loans often do so in order to borrow more than the maximum amount allowed by the federal loan programs,

which could potentially lead to unmanageable levels of debt among these private borrowers (Carey & Dillon, 2009; King, 1998).

Debt burden among college student borrowers remains an important public policy issue because of its adverse affects on individuals and society. At the individual level, unmanageable loan debt burden may lead a student to drop out before earning their degree (Cofer & Somers, 2000; Gladieux & Perna, 2005) or decide not to attend graduate school (Heller, 2001; Millet, 2003). Students who graduate with high debt burden may even be forced to postpone life milestones such as purchasing a home, getting married, or having children (American Association of State Colleges and Universities [AASCU], 2006; Baum & Sanders, 1998). In addition, students with excessive levels of education loan debt have a greater likelihood of defaulting on their loans during repayment. Defaulting on a student loan can result serious in financial hardships for students, such as credit report damage, denial of a professional license, ineligibility for federal financial aid in the future, legal action, and forfeiture of tax refund payments (Gladieux & Perna, 2005).

The student debt problem also has significant consequences at the societal level. The federal government incurs tremendous costs when large numbers of student borrowers default on their federal education loans because the government covers the losses to lenders (Christman, 2000; Flint, 1997). Consequently, a higher federal student loan default rate means greater costs to America's taxpayers. The nation's economy may suffer when large numbers of college graduates are forced to devote a significant share of their income to the repayment of debt (Harrast, 2004). Heavy debt burden can also discourage students from pursuing valuable public service careers, such as teaching or social work, because these careers have low earning potential (AASCU, 2006). Furthermore, since minority and low-income students are at the greatest risk of

acquiring excessive debt burden, the student indebtedness problem threatens to exacerbate longstanding social inequalities (Price, 2004a; 2004b). The many adverse affects of excessive debt burden corroborate why policymakers, financial aid experts, and the general public have all voiced serious concerns over students' increased reliance on loans to finance their college education.

Purpose of the Study

While most students are borrowing for higher education at reasonable levels, the fact that a growing number of students are acquiring high levels of loan debt and experiencing difficulty making their monthly repayments cannot be ignored (Baum & Schwartz, 2006). In 2008, 15% of bachelor's degree graduates *who borrowed* had accumulated \$40,000 or more in loan debt during their time in college (NPSAS, 2008). The severity of the student debt problem is further intensified by the fact that more students than ever before are using credit cards to pay for tuition and other college-related expenses (Sallie Mae, 2009). Students with high debt burden are more likely to experience diminished economic returns to their investments in higher education and encounter financial hardships after graduation. Perpetual tuition increases, reductions in federal and state appropriations for higher education, and increases in private lending all threaten to exacerbate the student debt problem (Carey & Dillon, 2009).

The purpose of the present study was to examine the decision to borrow and level of student loan indebtedness among 2007-08 bachelor's degree graduates. In particular, this study performed descriptive and multivariate analysis of data available from the 2008 National Postsecondary Student Aid Study (NPSAS:08) conducted by the U.S. Department of Education. At the time the present study was conducted, NPSAS:08 offered the latest and most comprehensive national data available pertaining to undergraduates' use of student loans to pay for college. The comprehensive nature of the NPSAS:08 dataset allowed for statistical analysis

of copious variables that could potentially influence students' initial decision to borrow for college and their cumulative level of indebtedness upon graduating with their bachelor's degree.

Research Questions

There was a primary research question and two sub-questions guiding this empirical study: What individual, familial, and institutional factors influenced the probability of borrowing and cumulative level of student loan debt held by college students graduating with their bachelor's degree from United States postsecondary institutions during the 2007-08 academic year?

1. What individual, familial, and institutional factors are associated with 2007-08 bachelor's degree graduates' probability of borrowing through student loans?
2. What individual, familial, and institutional factors are associated with the total level of student loan debt among 2007-08 bachelor's degree graduates who borrowed?

The conceptual framework guiding this study, which will be introduced and discussed in detail in subsequent chapters, provided the rationale for examining individual, familial, and institutional variables. In addition, it is important to note that this study examined the total amount of student loan debt borrowers' accrued through all types of student loans (i.e. federal, private, state, and institutional) in route to earning their bachelor's degree.

Rationale for the Study

Dramatic increases in tuition rates and burgeoning levels of student debt propose an important question: Is American higher education worth what it cost? Every year the federal and state governments, along with millions of citizens, collectively invest billions of dollars in higher education. Since the immediate economic sacrifices associated with expenditures on higher education are not trivial, clearly governments and individuals expect to realize substantial benefits in return for their investments. The notion that education has some benefits may be self-evident, but determining whether these benefits actually exceed initial expenditures is a question of great importance (Psacharopoulos, 2006). Traditionally, researchers and policymakers have

relied heavily upon the rational behavior approach proposed by human capital theory to examine why individuals and governments invest in education (Paulsen & Toutkoushian, 2008).

Building upon concepts first introduced by Adam Smith in his classic book *The Wealth of Nations*, economists in the 1960s first applied human capital theory as a way of estimating the value of education for individuals and the larger society (Bloom, Hartley, & Rosovsky, 2007). The seminal work of Schultz (1961) and Becker (1964) used human capital to suggest that individuals and society derive benefits from investments in people (Sweetland, 2006). Since the 1960s, countless research studies have used human capital theory as a framework to identify and measure the specific benefits that result from investments in education. Researchers have typically classified these benefits as private or public.

The private benefits of an investment in education refer to those benefits enjoyed directly by the individual (Cohn & Geske, 1990). The most obvious private benefit associated with participation in higher education is an increase in personal financial earnings. A college education is correlated with higher wages for both men and women, and among all racial/ethnic groups (Baum & Ma, 2007). Furthermore, an individual with a bachelor's degree is estimated to make \$1.2 million more throughout his/her working career than someone with only a high school diploma (Kantrowitz, 2007). College graduates are also less likely to become unemployed and more likely to have higher saving levels than individuals who did not earn a college degree (Bloom et al., 2007). In addition to these economic benefits, college graduates profit in many other ways from their participation in postsecondary education. Research suggests that attending college can enhance the overall quality of a person's life by improving their health and life expectancy, family life, consumptive behavior, and asset management (Baum & Ma, 2007; Bowen, 1997; Geske & Cohn, 1998).

The public benefits of education are those benefits that society derives beyond those enjoyed by the individual (Cohn & Geske, 1990). The far-reaching social benefits of investments in higher education are central to the country's overall well-being and vitality. From an economic perspective, producing a more educated citizenry has numerous benefits for the federal and state governments. The federal government collects \$132,762 more in income tax revenue over a lifetime for a bachelor's degree recipient as compared with a high school graduate (Kantrowitz, 2007). Adults with higher levels of education are less likely to become reliant upon federal assistance programs or become incarcerated, which decreases demand on public budgets (Baum & Ma, 2007).

Furthermore, many of the public benefits of higher education help fuel and strengthen America's democracy. Individuals who attend college are more likely to vote and are 30% more likely to be interested in politics than people who did not attend (Bloom et al., 2007). Participation in higher education has also been shown to increase charitable giving, volunteering, and openness to the opinions of others (Baum & Ma, 2007). College graduates are also more likely than non-graduates to lead healthy lifestyles (Baum & Ma, 2007), which can result in considerable tax savings for federal and state governments.

The collective findings from numerous research studies suggest that both individuals and governments experience benefits from investments in higher education (Bowen, 1997; Cohn & Geske, 1990; Paulsen, 2001). The private benefits of higher education help explain why millions of individuals are willing to endure immediate financial and social sacrifices in order to pursue a college degree. These personal sacrifices may include forgoing potential earnings that would result from working a full-time job or acquiring student loan debt in order to pay the costs associated with attending college. In addition, the public benefits resulting from investments in

higher education illuminate why governments allocate funding for postsecondary institutions and provide assistance directly to college students through financial aid programs. Through these investments, governments expect to realize an overall increase in human capital as the result of a more educated, engaged, and productive citizenry (Psacharopoulos, 2006).

Traditionally, higher education has been viewed as a social good that provides a multitude of benefits to the entire nation (Ehrenberg, 2006). During the 1960s and early 1970s, the federal government invested heavily in higher education primarily by providing appropriations directly to public colleges and universities. The underlying purpose of this strategy was to strongly support the public institutions so they could in turn offer low-cost tuition to the general public. Proponents of this approach asserted that while higher education undoubtedly benefited the individual, these private gains were far outweighed by the overall public benefits experienced by society (Alexander, 2002). From this perspective, policymakers view higher education as a public obligation and not a private privilege.

Within the past two decades, however, the burden of paying for higher education has dramatically shifted from federal and state governments to students and their families (Heller & Rogers, 2006). A decrease in federal and state government financial support for postsecondary institutions and escalating tuition rates have forced students to pay for a greater share of the costs of higher education (Alexander, 2002; Heller & Rogers, 2006). In addition, many research studies examining the returns on investments for higher education have estimated that the private returns outweigh the larger benefits to society (see Bloom et al., 2007). These estimates, in conjunction with the widening earning differential between college educated and less educated individuals, have led many of today's policymakers to view higher education as a private privilege and not a public obligation. The perspective that higher education is a private good

reflects the notion of academic capitalism and has resulted in the rationale that students, and their families, should be responsible for paying the bulk of their college costs (Slaughter & Rhoades, 2005).

The privatization of higher education has resulted in a dramatic increase in the number of students who borrow to cover their college-related expenses. From the perspective of human capital theory, students borrow to pay for the immediate costs of higher education with the expectation that this borrowing will help them realize benefits over the long term (Becker, 1993). The accessibility of federal and private loans has made attending college a reality for thousands of students who would have been unable to afford higher education without this financial support. Student loans have also given a growing number of students the ability to decide whether, and how much, they want to invest in their own human capital. Conversely, the growing reliance on credit to pay for college-related expenses has led many students to acquire excessive levels of debt.

Earning a bachelor's degree has traditionally been considered a prudent financial decision because of the monetary returns associated with this investment. However, high levels of student loan debt burden threaten to significantly diminish the monetary returns on this investment for a growing number of undergraduate borrowers. There are growing concerns that high debt burdens are adversely impacting students' quality of life after college and that our economy suffers when a significant portion of college graduates' incomes are devoted to debt retirement. Accordingly, it is critically important that the welfare of college students and society be improved, and not exacerbated, as a result of student borrowing (Harrast, 2004). Identifying the levels of debt burden held by today's college students is essential in order to accurately estimate the private and public returns to investments in higher education.

Scope of the Study

The scope of this study was to examine the borrowing behavior and cumulative level of indebtedness from student loans among America's 2007-08 bachelor's degree graduates using a nationally representative sample. In particular, NPSAS:08 dataset was used to identify the factors salient in predicting debt levels among undergraduates who relied upon student loans in route to earning their four-year degree. The sample consisted of students who earned their bachelor's degree during the 2007-08 academic year. Undergraduates who borrowed but dropped out before earning their bachelor's degree were not included in the sample. In addition, it was beyond the scope of this study to examine borrowing behavior and debt levels among students enrolled in graduate school or pursuing a professional degree.

The NPSAS:08 dataset contains information on students attending public and private non-profit and for-profit institutions, community colleges, and four-year colleges and universities. Therefore, results of this study reflect student borrowing behavior and debt burden among undergraduates who attended all types of postsecondary institutions in route to earning their bachelor's degree. Findings from this study reflect the borrowing behavior and levels of student loan indebtedness among undergraduate borrowers in the United States and should not be generalized to other countries.

Significance of the Study

Empirical and current research on college student indebtedness is needed to inform targeted policy responses that can help assuage the burgeoning levels of debt burden among recent college graduates. The present study identified the factors that influenced students' decision to borrow, or not borrow, through student loans in order to pay for their college-related expenses. In addition, this study examined the factors contributing to different levels of student loan debt among 2007-08 bachelor's degree graduates. Identification of these factors is the

foundation for the development and implementation of public policies and institutional practices aimed at protecting college students from acquiring unmanageable debt burden. Reducing the percentage of college graduates with high debt burdens can help decrease student loan default and bankruptcy rates, expand borrowers' life choices after graduation, and increase degree attainment across the country.

Chapter Summary

This chapter highlighted the problem of rising student loan debt burden among today's undergraduates. More students are borrowing than ever before to finance their college education and a growing number of students are accumulating unmanageable levels of debt. The purpose of the present study was to examine the decision to borrow and level of student loan indebtedness among America's 2007-08 bachelor's degree graduates. Particular attention was given to undergraduate borrowers who acquire the greatest amount of debt in route to earning their degree. The NPSAS:08 dataset from the U.S. Department of Education was utilized because at the time of this study it represented the latest and most comprehensive source of national data pertaining to the topic of student indebtedness.

Identifying the levels of debt burden among student borrowers is paramount in order to accurately estimate the private and public returns to financial investments in higher education. While the problem of student debt has received widespread attention in the media and public policy debates in recent years, there are relatively few empirical research studies that focus on the borrowing behavior and cumulative levels of student loan debt burden among different groups of bachelor's degree graduates. Specifically, the present study examines levels of indebtedness from federal, private, state, and institutional loans among America's recent bachelor's degree graduates. Findings from this study can be used to inform policy and practices aimed at protecting undergraduate borrowers from acquiring unmanageable debt burden.

The subsequent chapter examines how changes in the landscape of American higher education and dramatic shifts in the financial aid system have contributed to the rise in college student indebtedness. In addition, the chapter gives attention to the immediate and impending consequences of undergraduates' increased reliance on student loans to finance their college education. Relevant research literature pertaining to student borrowing and loan debt is presented. Perna's (2006a) model of college choice is adapted for the purposes of this study and used as a conceptual framework for understanding students' initial decision to borrow and their cumulative level of student loan debt upon graduating with their bachelor's degree.

CHAPTER 2 LITERATURE REVIEW

The purpose of this chapter is to provide a better understanding of the problem of student indebtedness in American higher education and develop the theoretical framework guiding this study. The chapter begins by defining the key terms and concepts that will be referenced throughout the remainder of this study. In the second section, attention is given to how increases in tuition rates and changes in federal financial aid policy have triggered undergraduates' increased reliance on student loans to pay for college. The next section provides a review of the extant research literature on student borrowing behavior and debt. The conceptual framework used to guide this study, Perna's (2006a) model of college choice, is presented and discussed in the subsequent section. The literature review concludes with a summary of the highlights presented throughout the chapter.

Definition of Key Terms

Debt burden. The level of difficulty or hardship a student borrower experiences in repaying his/her education loans (King & Bannon, 2002). Traditionally, a borrower's debt burden has been measured by the ratio of monthly student loan repayments to gross monthly income (Baum & O'Malley, 2003; Price, 2004b).

Federal education loans. Funding made available by the federal government allowing qualified students to borrow a specified amount of money each year while they are enrolled in higher education. However, the money borrowed must be repaid with interest. The majority of federal education loans awarded directly to postsecondary students are delivered through the Stafford Loan program, which offers both subsidized and unsubsidized loans (defined elsewhere in this section). The loans disbursed through the Stafford Loan program are guaranteed by the federal government and are awarded through the government, private lenders, or banks. Loans

provided by the government are administered by participating postsecondary institutions through the Direct Loan program.

Grants. Financial assistance awarded to students in the form of scholarships, fellowships, tuition waivers, and/or employer tuition reimbursements. Grants to students attending higher education are provided through numerous sources (e.g. federal government, states, postsecondary institutions, civic organizations, private foundations) and students do not have to repay these financial awards. Grants are typically awarded on the basis of a student's merit, financial need, or a combination of both merit and need.

Higher Education Act (HEA). Landmark federal legislation authorized in 1965 that introduced the first broad-based, federally-funded financial aid programs in America. Title IV of the HEA of 1965 established the Educational Opportunity Grant program (renamed Pell Grants in 1980), the Guaranteed Student Loan Program, and the College Work-Study program. Today, all three of these programs continue to play a significant role in the disbursement of student financial aid. The HEA goes through legislative reauthorization periodically as changes to federal financial aid policy are deemed necessary.

Loan default. Default on an education loan occurs when the student borrower can no longer make the minimum repayments on his/her student loan debt. Per the 1998 HEA amendments, a federal student loan is considered in default when the borrower has not made required payments for 270 days on loans with monthly payments or 330 days for loans with less frequent payments. Student loan default can result in credit report damage, loss or denial of a professional license, ineligibility for future federal financial aid, wage garnishments, forfeiture of tax refund payments, and legal action (Gladieux & Perna, 2005).

Merit-based financial aid. Merit-based financial aid programs use some form of eligibility criteria to determine whether a student merits financial assistance (Creech & Davis, 1999). A student may demonstrate merit on the basis of his/her academic, artistic, or athletic achievement. In addition, a student may be considered meritorious if he/she provides a valuable service to society, such as serving in the armed forces or intending to become a teacher in an underserved community.

Need-based financial aid. Need-based programs use some type of eligibility criteria to measure a student's financial need and/or ability to pay for college. A student's ability to pay is based upon an assessment of his/her (or his/her family's) income in order to determine how much the student could reasonably pay for one year of higher education at a particular college or university. This assessment yields the student's expected family contribution (EFC), which is then subtracted from the cost of attending a specified college in order to determine the student's overall level of financial need. Need-based financial aid programs are centered on the goal of access and seek to increase opportunities for low-income students to attend college (Doyle, 2008).

Pell Grants. Pell Grants are federally-funded and are awarded to financially needy undergraduates who have not earned a bachelor's or professional degree. The exact award amount of the grant is dependent upon the U.S. Department of Education's determination of the student's expected family contribution versus the cost of attendance at a particular college or university (McPherson & Schapiro, 1998). For the past four decades, Pell Grants have been the primary means through which federal assistance for college has been delivered to students with demonstrated financial need (Heller & Rogers, 2006).

Private education loans. Private, or alternative, loans are provided through a bank or private lending agency and have less favorable terms than student loans provided by the federal government. Private loans are generally considered a riskier form of loan borrowing since they are not guaranteed by the government and there are no limits on the interest rates and fees that private lenders can charge.

Subsidized federal loans. Subsidized loans are awarded based on the student's level of financial need. The federal government pays the interest on these loans while the student is enrolled in college and for a grace period of six months after the student leaves higher education. The maximum award amounts each year are determined by the student's dependency status (dependent or independent) and class year.

Unsubsidized federal loans. Unsubsidized loans are available to students regardless of their financial need, but the student is responsible for repaying the interest accrued. Interest accumulates on the principal loan amount the student borrows while in school and not yet in repayment. Like subsidized loans, the maximum amount a student may borrow annually through unsubsidized loans is determined by his/her dependency status and class year.

Reasons for the Rise in College Student Indebtedness

The dramatic increase in borrowing and debt burden among America's college students has been attributed to at least three major factors. First, as tuition rates at all types of postsecondary institutions continue to increase, a growing number of students have turned to loans (Heller & Rogers, 2006) to pay for their college-related expenses. Secondly, federal Pell Grants have been unable to keep pace with rising tuition rates, forcing a growing number of low-income students to take out loans to pay for college (Curs, Singell, & Waddell, 2007; Redd, 2004). Third, several key legislative acts have broadened eligibility requirements for federal education loans and raised the maximum dollar amount students may borrow annually (King, 2005). The interplay of

these factors has contributed to the rise in student borrowing and triggered widespread concerns about the levels of debt burden held by today's college graduates.

Considerable attention has been given to the skyrocketing costs associated with attending higher education. Recent data from the College Board (2009) indicate that from 1999-2000 to 2009-10, tuition and fees at public four-year universities rose at an average annual rate of 4.9%. This rate of increase was higher than in either of the previous two decades. Tuition and fees have also continued to steadily climb at private colleges and universities, for-profit postsecondary institutions, and community colleges. In addition to paying for tuition and fees, students must also purchase books and supplies and pay for living expenses such as housing and food (College Board, 2009). Consequently, a growing percentage of college students have turned to education loans in order to bridge the gap between their existing financial resources and the rising costs associated with attending higher education.

The declining purchasing power of federal Pell Grants has forced a growing number of low-income students to borrow through loans to pay for college (Curs, Singell, & Waddell, 2007; Gladieux & King, 1995). For the past four decades, federal Pell Grants have been the primary means through which need-based financial aid for college students has been delivered (Heller & Rogers, 2006). Approximately 14% (\$18.2 billion) of all financial aid awarded to undergraduates during the 2008-09 academic year was delivered through Pell Grants (College Board, 2009). While Pell Grants have helped make college a reality for thousands of low-income students, the program has been criticized for failing to keep pace with the rapid increases in college tuition and fees (Redd, 2004). During the 1987-88 academic year, the maximum Pell Grant award covered 50% of tuition and fees at public four-year institutions and 20% at private four-year

institutions. However, Pell Grants covered only 32% of public costs and 13% of private costs during the 2007-08 academic year (College Board, 2008).

The federal government provides education loans to college students primarily through the Stafford Loan program. Over time, Stafford Loans have transformed from a small program designed to supplement Pell Grants into the largest student financial aid program in the country. The reauthorization of the Higher Education Act in 1972 triggered a shift in federal financial aid from grants to primarily loans. While this shift provided more financial aid dollars overall for students, it significantly increased the share of college costs paid by students and their families (Price, 2004b). By 1980, the Stafford Loan program had surpassed Pell Grants as the dominant source of federal student aid (Mumper & Vander Ark, 1991). Even more students began turning to federal loans during 1980s and 1990s when college tuition rose faster than the rate of inflation (Alexander, 2002). By the 1994-95 academic year, federal loans provided more than twice as much money as all other federal student financial aid programs combined (Hartle, 1996).

The 1992 reauthorization of the HEA triggered yet another dramatic increase in student borrowing. This legislation broadened eligibility for federal subsidized loans, increased the annual borrowing limits, and established the unsubsidized loan program that was open to all students (King, 2005). The result was a rise in student borrowing that began to emerge almost immediately after this legislation was passed. Between 1992-93 and 1995-96, undergraduate borrowing through the federal loan programs had increased by more than 100% (King, 1999). By the 2008-09 academic year, federal loan disbursements had increased to \$56.5 billion and represented 45% of all financial aid disbursed to undergraduates (College Board, 2009).

The dramatic rise in federal student loan borrowing has heightened concerns about student loan default rates. Per the 1998 HEA amendments, a federal student loan is considered in default

when the borrower has not made required payments for 270 days on loans with monthly payments or 330 days for loans with less frequent payments. Student loan default has severe consequences for borrowers, postsecondary institutions, and the government. For student borrowers, loan default can result in credit report damage, loss or denial of a professional license, ineligibility for future federal financial aid, wage garnishments, forfeiture of tax refund payments, and legal action (Gladieux & Perna, 2005). A college or university with excessive default rates forfeits their eligibility to participate in the federal student financial aid programs. Since the government covers the financial losses lenders experience when borrowers default on their federal student loans, increases the national default rate produce tremendous costs for the federal government (Christman, 2000; Flint, 1997).

The default rate among student borrowers increased during the late 1980s until it peaked in 1991 when 22% of borrowers defaulted within their first two years of repayment (Fossey, 1998). Default rates began to decline after 1991 as a result of significant changes in the federal lending policy. Throughout the early 2000s, the annual student default rate remained between 4% and 6% (U.S. Department of Education, 2009). However, the national student loan cohort default rate for the 2007 fiscal year increased to 6.7%, which was a notable rise from the 2006 rate of 5.2%. The data indicate that more than 225,300 student borrowers, whose first repayments were due between October 2006 and September 2007, had defaulted on their loans by September 2008. This recent increase in the national cohort default rate may legitimize concerns (Pilon, 2008) that the latest economic downturn will cause a growing number of borrowers to default on their student loans.

Student Borrowing and Debt Burden: A Review of the Literature

A review of the extant research on college student indebtedness reveals an abundance of studies that examine students' use of education loans to pay for college. Researchers from the

fields of education, economics, sociology, psychology, and finance have all contributed to the growing body of literature on student borrowing behavior and debt burden. In addition, policy and non-profit organizations have played an important role in generating policy reports that examine the student debt problem (Dowd, 2008). The majority of research on student indebtedness to date has focused on borrowers' use of federal education loans to finance their college education. However, in recent years a growing number of research studies and policy reports have examined the impact of private loans.

This literature review addresses three topics germane to student borrowing and high debt burden.¹ First, attention is given to the body of research that has examined students' attitudes and perceptions about borrowing to pay for college. The second section examines research studies focusing on student loan default. Third, a review is provided of the studies and policy reports that identify those students at risk of acquiring the highest levels of loan debt. These three areas of research are important for the present study because these studies illuminate many of the factors that influence students' decision to borrow and level of student loan debt. The literature review concludes with a summary of several key themes from the existing research literature on college student indebtedness.

Students' Attitudes and Perceptions of Borrowing

A growing body of research literature has examined students' attitudes towards borrowing to pay for college and how borrowers perceive their debt burden. Researchers have investigated the attitudes and perceptions held by high schools students (Perna, 2008), borrowers enrolled in postsecondary education (Baum & O'Malley, 2003; Trent, Lee, & Owens-Nicholson, 2006),

¹ The present study is concerned with the cumulative debt burden held by borrowers who have already earned their bachelor's degree. Therefore, research studies that specifically address the impact of loans on students' decision making and behavior while enrolled (e.g. persistence) are not included in this literature review. Readers are encouraged to see Dowd (2008) for a review of existing literature on this topic, including potential solutions to many of the methodological challenges that have typically plagued this line of research.

borrowers who dropped out of college (Gladieux & Perna, 2005), and borrowers who graduated from college (Millett, 2003). The bulk of existing research on this topic has focused on students' perceptions of credit cards, with fewer studies giving attention to students' attitudes and perceptions of education loan debt. Collectively, this line of research provides a better understanding of the diverse factors that shape students' views of borrowing and debt burden, and helps explain differences in borrowing behavior across groups.

In general, researchers have found that the majority of college students have favorable attitudes regarding the use of credit (Lyons, 2008; Xiao, Noring, & Anderson, 1995). Students with more tolerant attitudes towards debt typically have higher levels of debt burden (Davies & Lea, 1995). Furthermore, college students tend to be even more tolerant of debt once they have become indebted (Davies & Lea, 1995). These findings suggest that students who have the most liberal attitudes towards borrowing via student loans, or credit cards, to pay for college are at the greatest risk of acquiring unmanageable debt burden.

Another noteworthy finding within this line of research is that some student groups are more averse to borrowing than others. Research suggests that Asian, Hispanic, and low-income students are less willing to borrow to pay for college (Callender & Jackson, 2005). As a result, many students belonging to these particular groups make a conscious decision not to take out education loans (Burdman, 2005; Cunningham & Santiago, 2008). While an aversion to borrowing can prevent students from accumulating excessive debt burden, it may also function as a barrier to college access or cause a student to drop out because of a lack of financial resources. Furthermore, students who avoid borrowing may be forced to attend college part-time or work more hours, both of which can reduce the student's chances of completing their degree (Dowd, 2008).

Students' attitudes and perceptions towards borrowing appear to be influenced by a variety of factors. Perna (2008) found that high school students' perceptions of using education loans to pay for college are shaped by messages received from their parents, school counselors, and teachers. Peer groups also play a role in helping students make decisions about borrowing for college (Tierney & Venegas, 2006). Trent et al. (2006) found that students expecting to earn a professional degree and students who believed that good luck is important for success were more likely to acquire education loans. Other studies suggest that a college student's locus of control (Joo, Grable, & Bagwell, 2003; Trent et al., 2006) and perceptions of money in general (Hayhoe, Leach, & Turner, 1999; McDonough & Calderone, 2006) shape their views about borrowing and the prospect of becoming indebted.

Researchers have examined how borrowers perceive the college-related debt they have accumulated. Baum and O'Malley (2003) found the majority of students who used loans in route to earning their bachelor's degree believed the benefits of borrowing outweighed the problems associated with repayment. However, they also found that some students had negative attitudes toward their education debt, and that lingering loan debt was a major reason why many students did not pursue graduate school. Several studies indicate that negative attitudes and perceptions of one's education debt burden can damage a student's psychological well-being. For example, students with high debt burden report higher levels of overall stress, lower self-esteem, and a decreased sense of ability to manage their money (Lange & Byrd, 1998; Norvilitis et al., 2006).

Many students appear to have considerable misperceptions regarding the use of credit to pay for college. King and Frishberg (2001) found that students tend to underestimate the total costs of their loan borrowing and overestimate the amount they will earn upon entering the workforce. In addition, students are likely to be confused by interest rates and underestimate the

total amount of interest when facing an extended repayment period (Lewis & van Venrooij, 1995). These findings suggest many student borrowers do not fully understand the consequences of acquiring debt through student loans.

Student Loan Default

Numerous studies of student indebtedness have focused on the factors that lead borrowers to default on their student loans. However, the most robust and methodologically sound research on student loan default was conducted during the late 1980s and in the mid-to-late 1990s, in a different historical context (Gross, Cekic, Hossler, & Hillman, 2009). In reviewing the extant research literature on student loan default, Gross and colleagues assert that few default studies employing multivariate statistical methods and using national databases have been conducted in recent years. Considering the increases in student borrowing and the changes in federal loan disbursement and default policies that have occurred within the last decade, new research studies on loan default would represent a valuable contribution to the literature on student indebtedness.

Prior research studies have primarily examined the individual and institutional factors that are associated with student loan default. In general, findings from these studies suggest that institutional characteristics are not strong predictors of borrowers' loan repayment behavior (Knapp & Seaks, 1992; Volkwein & Szelest, 1995; Wilms, Moore, & Bolus, 1987). As Volkwein et al. (1998) propose, evidence from several studies indicates that a borrower's demographic characteristics and level of success in college are more influential in predicting default than is the type of postsecondary institution the borrower attends.

The most consistent finding among existing studies is that borrowers who do not graduate are more likely to default on their loans than borrowers who do graduate (Dynarski, 1994; Knapp & Seaks, 1992; Podgursky et al., 2000; Volkwein & Szelest, 1995; Woo, 2002). This finding is attributed to the fact that while burdened with loan debt that must be repaid, borrowers who drop

out before graduating do not experience the increase in financial earnings that a college degree provides (Gladieux & Perna, 2005). Several other variables related to a student's academic performance while in college have been identified as predictors of loan default. Borrowers with lower GPAs (Christman, 2000; Flint, 1997; Volkwein & Szelest, 1995; Volkwein et al., 1998) and who fail credit hours (Christman, 2000; Steiner & Teszler, 2003) are at greater risk of defaulting on their loans. In addition, studies have found that a student's academic major (Flint, 1997; Volkwein & Szelest, 1995), enrollment pattern (Podgursky et al., 2002; Woo, 2002), and employment status (Volkwein et al., 1998) can play a role in predicting default.

A borrower's demographic characteristics can exert a strong influence on their loan repayment behavior. Researchers have found that a student's race/ethnicity (Dynarski, 1994; Flint, 1997; Volkwein et al., 1998; Woo, 2002), income status (Dynarski, 1994; Knapp & Seaks, 1992), and age (Flint, 1997; Podgursky et al., 2002; Woo, 2002) are significant predictors of loan default. Specifically, the likelihood of default is highest for borrowers who are African American, Hispanic, or who come from low-income families. Older students are at greater risk of defaulting than younger students, perhaps because older students are more likely to have accumulated more overall debt (e.g. credit card, mortgage) and have dependents (Gross et al., 2009). Other demographic variables that can influence default include the borrower's level of income (Dynarski, 1994; Volkwein & Szelest, 1995; Woo, 2002), marital status (Dynarski, 1994; Volkwein et al., 1998), and parents' level of income and education (Knapp & Seaks, 1992; Volkwein et al., 1998; Woo, 2002).

Borrowing Behavior and High Loan Debt Burden

A growing number of studies have examined borrowing behavior and average loan debt burden among different student groups. To date, policy reports and white papers published by non-profit higher education organizations represent the bulk of existing research on trends in

student loan borrowing. These reports have typically conducted descriptive and/or multivariate statistical analysis of national datasets available through the National Center for Education Statistics. In addition, many existing policy reports and white papers have placed particular emphasis on describing the characteristics of borrowers who acquire the highest levels of student loan debt. A smaller number of peer-reviewed journal articles have focused on high loan debt burden among college students.

A consistent theme among existing reports is that more students are borrowing more money via education loans than ever before to finance their college education (AASCU, 2006; Boushey, 2005; Choy & Li, 2006; College Board, 2009; King, 2005; King & Bannon, 2002; King & Frishberg, 2001; Project on Student Debt, 2009; Steele & Baum, 2009). In particular, these reports tend to highlight annual increases in loan borrowing and/or describe average debt levels across different groups of student borrowers. Most extant reports have focused specifically on the debt levels of bachelor's degree recipients. The latest data indicate that approximately two-thirds of all college students who graduated with their bachelor's degree during the 2007-08 academic year had acquired student loan debt and the average debt level for these students was \$23,200 (NPSAS, 2008).

In conjunction with research on student loan default, policy reports and journal articles identifying the characteristics of borrowers with high debt burden help provide a more complete picture of the student debt problem.² Several policy reports and white papers have examined student loan debt burden based upon borrowers' demographic characteristics. In general,

² Default studies undoubtedly represent an important contribution to the extant research literature on student indebtedness. However, default research alone does not provide a complete picture of the student debt problem. Not all borrowers who acquire high debt burden default on their loans during repayment. While these borrowers may not become an official default statistic, this does not negate the fact that many of these students will experience financial hardships and diminished life choices as a result of their heavy debt burden. The negative consequences resulting from high levels of indebtedness extend far beyond simply whether or not a borrower defaults.

findings from these reports suggest low-income, African American, and Hispanic student borrowers are more likely to graduate with the highest levels of loan debt burden (Kantrowitz, 2009; King, 2005; King & Bannon, 2002). In addition, findings indicate that students who borrow through private loans (Carey & Dillon, 2009; College Board, 2009; Project on Student Debt, 2009) or attend higher-priced private or for-profit institutions (Boushey, 2005; College Board, 2009; Kantrowitz, 2009) are at greater risk of accumulating high debt burden.

A smaller number of peer-reviewed journal articles have examined the factors leading to high levels of loan debt burden among undergraduate borrowers. A notable exception is the work of Price (2004a), who examined debt burden levels among 1992-93 bachelor's degree graduates. Using a nationally representative sample, Price utilized the '8% rule' as a threshold to identify those students at the greatest risk of having excessive levels of loan debt four years after graduation. The 8% rule was a common benchmark used by the U.S. Department of Education and many lending agencies in late 1980s and 1990s to determine what constitutes an acceptable level of student loan debt for a college graduate. The rule asserts that no more than 8% of a students' post-graduation income should be devoted to student loan repayment and students who exceed this threshold are more likely to default (Baum & Schwartz, 2006). Price found that low-income, Black, and Hispanic students were disproportionately represented among students who devoted more than 8% of their monthly income to the repayment of their education loans. In addition, Price discovered that students employed in legal occupations and professional careers were more likely to have excessive loan debt burden.

Harrast (2004) examined borrowing behavior and loan debt levels among students attending a large, research-extensive university. He found that race/ethnicity, GPA, age, academic major, and number of semesters required for degree completion were associated with

levels of loan debt for the borrowers in his sample. Hispanic students had the highest debt burden among all ethnic groups and each year of age added an average of \$312 to a student's cumulative loan debt. Furthermore, each one point increase in college GPA reduced a student's debt by \$4,402. Harrast also found that students majoring in special education, computer engineering, sociology, art history, and risk management and insurance had higher levels of debt, though he acknowledged it is difficult to determine the reason for the higher debt contribution among these particular majors.

Summary of Existing Research

College student indebtedness has received increased attention in the research literature within the last decade and researchers from numerous academic disciplines have strengthened our understanding of this topic. Several key themes emerged from this review of the literature. First, there is a dearth of recent, empirical research that uses multivariate statistic methods and a national representative sample to examine students' probability of borrowing and their subsequent level of student loan indebtedness. Second, consistent findings across multiple studies suggest that low-income, Latino, and African American students are at the greatest risk of defaulting, and acquiring the highest levels of student loan debt. Third, Latino and Asian students appear to be the most adverse to borrowing and the least tolerant of debt. The hesitancy among Latino students to borrow or acquire debt seems to be justifiable considering they are more likely than their peers to graduate with high levels of student loan debt.

One particular finding that emerged from this review of the research literature deserves further attention. There are several possible explanations for the seemingly contradictory findings that Latino students are loan averse, but yet are disproportionately represented among borrowers who experience financial hardships as a result of their loan borrowing. Findings suggest that Latino bachelor's degree graduates are likely to have lower starting salaries upon

entering the workforce than White students (Saenz & Ponjuan, 2009). Therefore, Latino students who borrow may experience increased hardships during loan repayment because their loan debt levels are high relative to their income.

A second explanation for the contradictory findings regarding the borrowing behavior of Latino students is the research methods that have been used to derive these findings (Dowd, 2008). In recent years, several researchers have highlighted the methodological problems that are evident in many existing causal studies of student financial aid (Cellini, 2008; Chen, 2008; Dowd, 2008). These problems could have potentially resulted in statistical bias and inaccurate results. In addition, few existing studies that address student loan borrowing have incorporated interaction terms to examine the relationship between students' race/ethnicity and income status. Researchers have advocated for the use of interaction terms in future studies of student financial aid (Chen, 2008), which could help reveal if Latino students' loan borrowing behavior differs as a function of their level of income.

Conceptual Framework

Borrowing to pay for higher education is a choice each college student must make. The majority of undergraduate students in American can gain access to federal and/or private loans with relative ease. The initial decision a student must make is simply whether or not he/she will rely upon credit to cover the immediate expenses associated with attending higher education. For students who do make the initial decision to borrow, these individuals must then decide how much debt they are willing to accrue in order to earn their degree or achieve their academic goals. Therefore, a framework for understanding how college students make choices has inherent value in examining student borrowing behavior and debt burden. The present study adapts Perna's (2006a) proposed model of student college choice to examine students' choice to borrow through student loans and the cumulative level of loan debt among borrowers.

Traditionally, many research studies examining student choice have either explicitly or implicitly relied upon economic models of human capital investment. Studies conducted using this framework place the individual at the center of the decision making process (Long, 2007) and view students as rational actors whose college-related choices are based upon their comparison of the perceived costs and benefits of these choices (Perna, 2006a). Utilizing this economic framework, many existing studies have treated student decision making as a linear and sequential process of cost-benefit analysis that begins with the student's initial decision to enroll, continues with reenrollment and persistence, and then culminates with graduation and career choice (Dowd, 2008).

A major contribution of the rational human capital investment model has been its attention to finance variables such as financial aid, tuition rates, and family income that frequently exert a strong influence on students' college-related decisions (Paulsen, 1998; Perna, 2006a). While the human capital approach has proven valuable for studying how finances affect students' college-going choices and behavior, the model's explicit focus on individual-level decision making has significant limitations in explaining differences in college choices across student groups (Perna, 2006a). Consequently, a growing number of researchers have drawn attention to the inherent limitations of relying exclusively on the rational human capital approach to understand issues related to college access, choice, and success (Dowd, 2008; Perna, 2006a; St. John & Paulsen, 2001). These researchers have asserted that exogenous factors, such as institutional characteristics and public policies, often influence students' decision making about higher education and have advocated for the use of a multi-disciplinary approach in studying college choice.

Accordingly, Perna (2006a) developed a conceptual model of college choice that incorporates key constructs from both economic and sociological perspectives (see Figure 2.1). Her model also takes into consideration relevant social structures and resources that can influence student decision making about higher education. Specifically, Perna's model of college choice, "integrates aspects of the economic theory of human capital and sociological notions of social and cultural capital and recognizes that multiple layers of context influence an individual's college-related decision making" (Perna, 2006b, p. 1621). In addition to offering a multi-disciplinary approach to the study of college choice, a major contribution of Perna's model is the attention given to exogenous variables like institutional characteristics and public policy that can shape student choice and behavior.

Because Perna's model of college choice is relatively new, very few researchers to date have applied the model to guide their own research. However, the model may prove to be especially useful in helping researchers develop a better understanding of how different sources of financial aid affect student decision making and behavior. Financial aid research in particular has been inclined to rely heavily on the human capital framework and researchers have been slow to consider how factors like the availability and quality of financial aid information, students' college aspirations, and socioeconomic characteristics influence college choices (Dowd, 2008). By accounting for many relevant sociocultural factors that tend to be omitted in financial aid studies that use the human capital theory approach, Perna's model has the potential to provide researchers with a more sophisticated understanding of how financial aid impacts student choice and college-going behavior. Additionally, Perna (2008) has demonstrated the relevance of her model in studying financial aid by using it as a framework to examine the factors that shape high school students' perceptions of using student loans to pay for college.

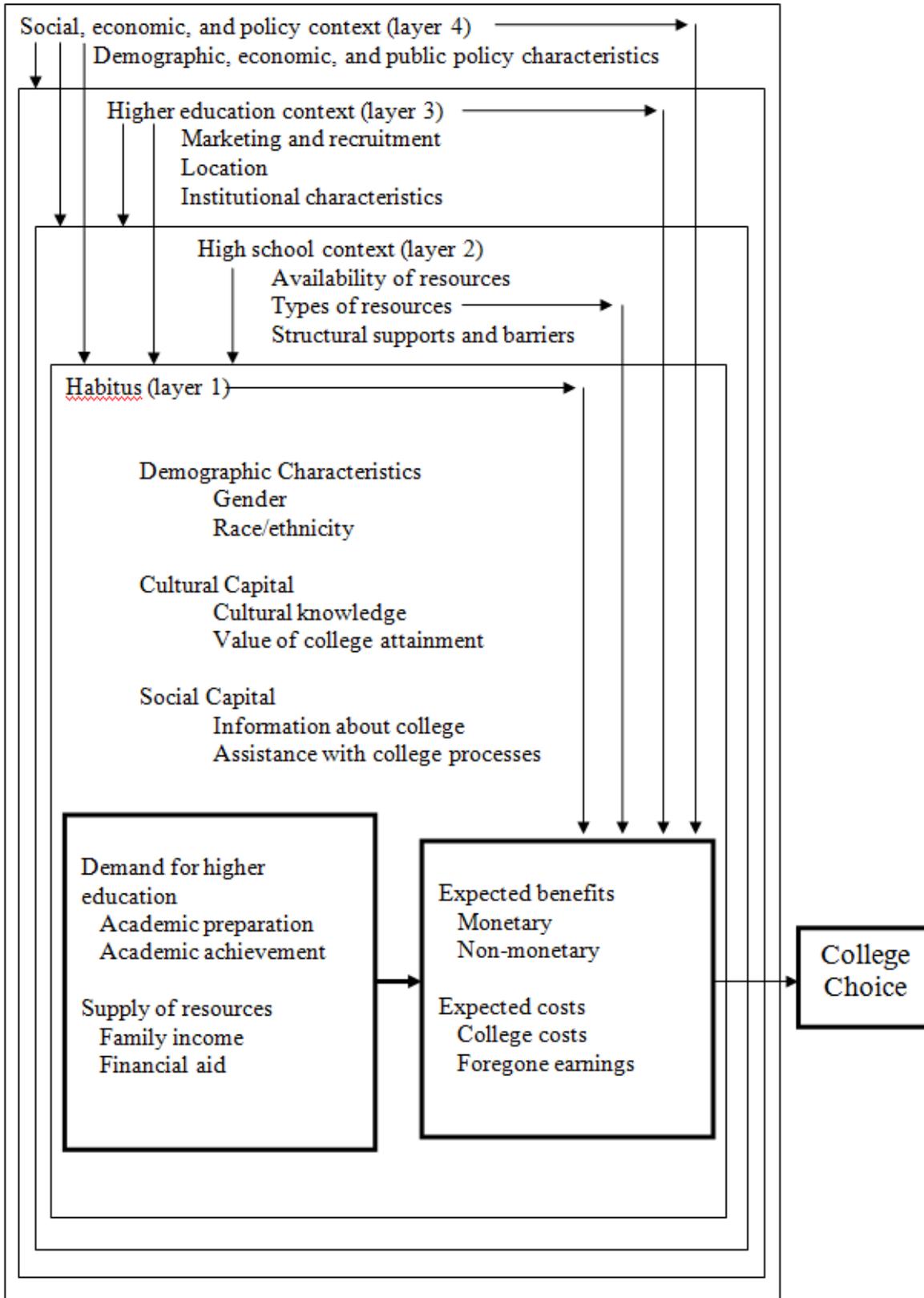


Figure 2-1. Perna's model of college choice

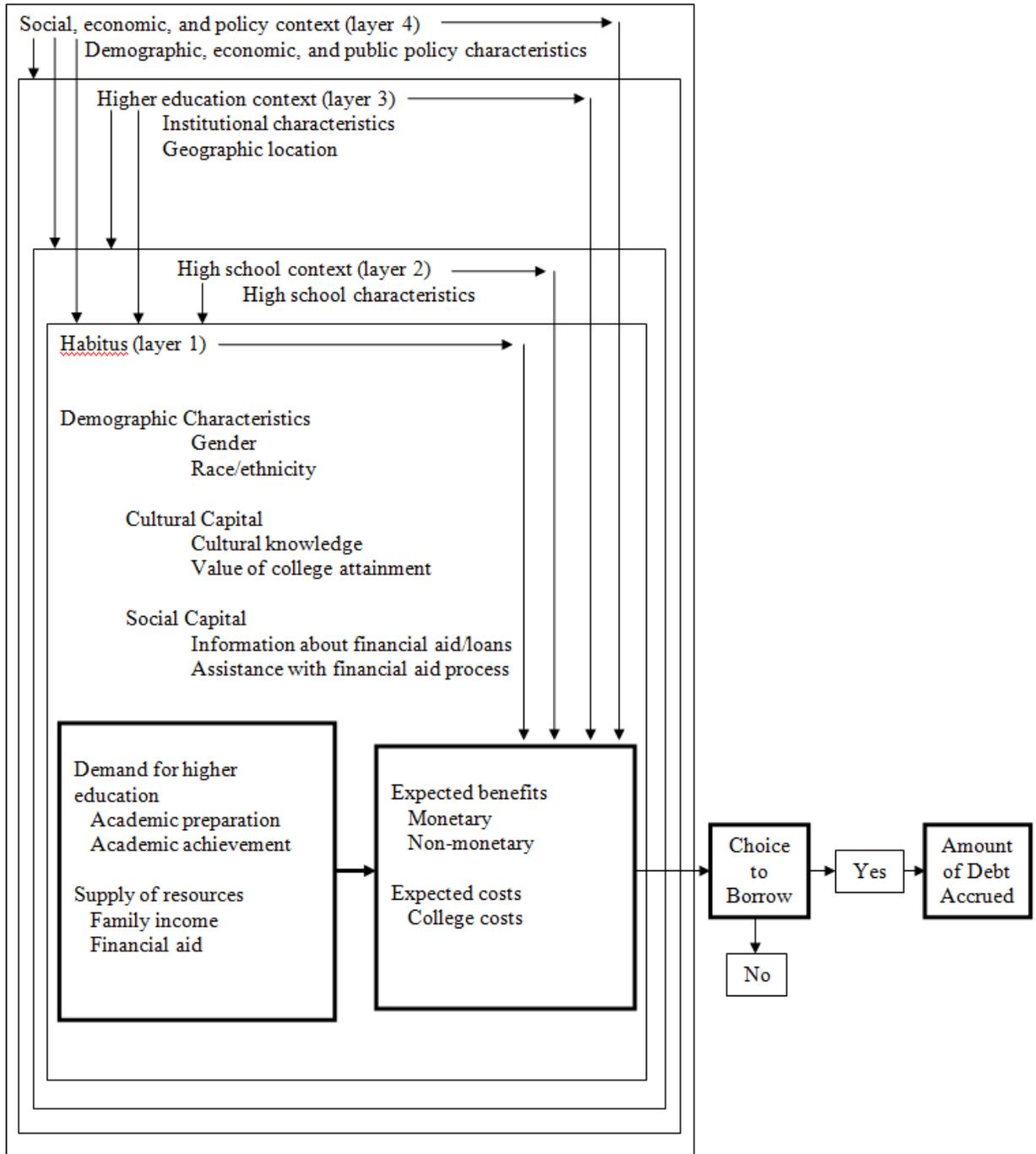


Figure 2-2. Perna's model of college choice adapted to examine student loan borrowing

The present research study adapts Perna's model of college choice as a framework to better understand undergraduate borrowing behavior (see Figure 2.2). Specifically, the model is applied to examine a student's choice to borrow for college and the cumulative amount of loan debt a

student accrues in route to earning their bachelor's degree. While the traditional human capital approach views student borrowing primarily as an individual-level decision, Perna's model offers a multilayer context that accounts for the multitude of external factors that can influence a student's borrowing behavior. Applied to the present study, Perna's model assumes that students will make decisions about borrowing through student loans within a situated context. That is, student's choice to borrow and their cumulative debt burden is influenced directly and indirectly by their family context, the characteristics of the high school and postsecondary institutions they attend, and by the larger social, economic, and policy context (Perna, 2008).

While most existing research studies of student borrowing and indebtedness have either explicitly or implicitly relied on a rational human capital investment framework, the present study applies a promising new conceptual model to better understand students' decision to borrow and the level of student loan indebtedness among recent bachelor's degree graduates. The following sections describe the four contextual layers of Perna's model of college choice and call attention to the specific constructs within each layer that are salient in explaining student borrowing behavior. In addition, relevant research on student borrowing and indebtedness is highlighted within each contextual layer of the model to corroborate the applicability of the model for this study.

Layer 1: The Student and Family Context

Layer 1 of the model assumes that an individual's demographic characteristics, as well as his/her access to social and cultural capital, exert an influence on college choice (Perna, 2006a). This layer is characterized by a concept referred to as the student's habitus, which is defined as, "a common set of subjective, internalized, class-based perceptions that shape an individual's expectations, attitudes, and aspirations" (McDonough & Calderone, 2006, pg. 1704). A student's

habitus can exert a strong influence on the decisions they make about borrowing through loans to finance their college-related expenses.

Demographic characteristics

The conceptual model suggests that individual characteristics like gender, race/ethnicity, and socioeconomic status influence student decision making about higher education. These three demographic characteristics have been analyzed in numerous existing research studies pertaining to college student borrowing and indebtedness (see Flint, 1997; Kantrowitz, 2009; Price, 2004a; Volkwein et al., 1998). In general, most of these studies have found little difference between male and female college students with regards to their use of education loans.

Numerous research studies and policy reports have examined how students' race/ethnicity and socioeconomic status impact their borrowing behavior and debt levels (see Flint, 1997; Kantrowitz, 2009; King & Bannon, 2002; Price, 2004a; Volkwein et al., 1998). Findings suggest that Asian, Hispanic, and low-income students are more averse to borrowing than other student groups and may completely avoid using loans to finance their college education (Burdman, 2005; Cunningham & Santiago, 2008; Mendez & Mendoza, 2008). For students who are debt averse, the perceived costs of borrowing appear greater than the perceived benefits of using credit as a means of financing their degree. Furthermore, findings suggest that Latino and low-income students who do borrow are at the greatest risk of defaulting on their loans (Volkwein et al., 1998) and accumulating high debt burden (Price, 2004a).

Sociological perspectives: Social and cultural capital

Social capital and cultural capital are useful concepts in studying college choice because they provide a framework for examining how socioeconomic characteristics influence student decision making about higher education. These sociological perspectives reflect differences in students' expectations and preferences that are not captured by rational human capital investment

models (Perna, 2006a). Theories of social and cultural capital are particularly useful in helping researchers develop a better understanding of the non-monetary factors that influence students' college-related choices. Applied to the present study, sociological approaches can help explain differences in the ways students obtain information about education loans, and shed light on the borrowing behaviors of different student populations.

The social capital framework suggests that individuals experience positive benefits from their involvement and affiliation with groups (Tierney & Venegas, 2006). Students leverage their social capital in order to accumulate other forms of capital (e.g. human, cultural) and gain access to institutional resources and support (see Perna, 2006a). Notable forms of social capital that students utilize when making decisions about college include their parents, schools, teachers, counselors, and peer groups. The amount of social capital a particular student has access to is determined by the size of their social networks and the amount of economic, cultural, and social capital that is possessed by the individuals within these networks (Bourdieu, 1986).

Students rely heavily on their social capital to make numerous decisions about higher education, including choices about borrowing to pay for college. As the model indicates, social capital can help students navigate the often confusing process of applying for and obtaining financial aid. Parents, school counselors, and teachers all represent forms of social capital that high school students can use when making decisions about whether or not to borrow for college (Perna, 2008). In addition, Tierney and Venegas (2006) found that peer groups can help high school students make decisions about applying to college and understanding how to pay for college. A student's capacity to act on financial aid information, and understand the true costs and benefits of borrowing, is strongly influenced by his/her social capital.

Cultural capital refers to the language skills, cultural knowledge, and mannerisms that are derived from one's parents and that define an individual's class status (Bourdieu, 1986). The concept of cultural capital has been used to explain how membership in particular groups is advantageous for some individuals. For example, students from high- and middle-class families typically possess the types of cultural capital that are the most valuable (McDonough, 1997). As it pertains to educational attainment and success, cultural capital is delivered from parents to their children in the form of knowledge and attitudes needed to successfully navigate the education system.

The concept of cultural capital implies that students' borrowing behavior is strongly influenced by their parents' perceptions of the use of credit, and more generally about the value their parents' place on college attainment. Students with college-educated parents often benefit from a home environment that offers a wealth of information about college, to include advice about borrowing, that students can access (McDonough, 1997). Conversely, first-generation college students may be discouraged from using student loans because their parents are debt averse or do not understand the financial aid system. While most parents at middle- and high-resource high schools expect their students will need to rely upon loans to pay for college, parents at low-income high schools generally do not want their students to borrow (Perna, 2008). These issues highlight the important role that a student's cultural capital exerts on their borrowing behavior.

Economic perspectives: Human capital theory

The rational human capital investment model is the foundation of Perna's model. From an economic perspective, an individual is motivated to pursue higher education when they believe the long-term benefits outweigh the immediate costs (Becker, 1997; Manski & Wise, 1983). The immediate direct costs associated with attending college include tuition, fees, books, and living

expenses. In addition to these direct costs, the student also experiences the indirect costs associated with relinquishing the income that would be derived from working a job instead of being enrolled in college. The economic benefits accrued from participation in higher education include enhanced knowledge and training, as well as greater earning potential throughout the remainder of the individual's life (Volkwein et al., 1998). Economists assume that rational individuals will weigh these expected costs and benefits when deciding whether to invest in their own human capital by pursuing higher education (Paulsen, 2001).

The cost-benefit comparison is a fundamental tenet of human capital investment theory and is useful in understanding students' decision to borrow for college. In essence, students borrow in the present under the assumption that the long-term monetary and nonmonetary benefits of earning a college degree will outweigh the immediate costs of becoming indebted. The theory claims that individuals perform the cost-benefit comparison based upon the information that is available to them, and does not presume that individuals have all of the pertinent information when making decisions (DesJardins & Toutkoushian, 2005). This suggests that knowledge regarding the actual costs and benefits of borrowing for college can vary significantly across student groups. Furthermore, relying on incomplete information or inaccurate assumptions can help explain why many students underestimate their loan borrowing and overestimate the amount they will earn upon entering the workforce (King & Frishberg, 2001).

Human capital theory suggests that, "a student's academic preparation and achievement and access to financial resources are expected to influence the calculation of costs and benefits" (Perna, 2008, pg. 591). As depicted in the conceptual model, a student's demand for higher education is strongly influenced by his/her academic preparation and performance. Students with greater academic preparation and who excel academically before college are more likely to

pursue postsecondary education. In addition, students who possess greater academic preparation and achievement may demonstrate a willingness to borrow for college in order to achieve their academic goals.

A student's supply of financial resources, including family income and availability of financial aid, can influence his/her borrowing behavior. Students from high-income families or students who have received generous financial aid in the form of grants may be able to afford college without the use of education loans. Conversely, many students from low-income families (Christou & Haliassos, 2006) and students who receive a smaller share of grant aid are more likely to need to borrow in order to make attending college a reality. The supply of financial resources available to a student may also be dependent upon the maximum amount they are eligible to borrow through student loans.

Layer 2: School and Community Context

Layer 2 of the conceptual model gives attention to students' high school and community context and reflects what McDonough (1997) refers to as organizational habitus. In particular, this layer "recognizes the ways in which social structures and resources facilitate or impede student college choice" (Perna, 2006a, pg. 117). While numerous studies have examined how schools impact the decisions high school students make about college, little is known about how the community context (e.g. church, civic organizations) influences students' college choices (Perna, 2008). Applied to the present study, this contextual layer addresses the specific types of resources and support systems (or lack thereof) a high school makes available to students that can influence their decisions about borrowing to pay for college.

The high school context often reflects the amount of social capital that is available to a particular student. High-income or private high schools, in comparison to low-income or urban public schools, typically provide students with greater resources and support that can help them

make informed decisions about borrowing for college. Students attending higher-income schools are more likely to have immediate access to knowledgeable financial aid counselors, teachers, and peers who can provide valuable information about college costs and financing strategies (Perna, 2008; Stanton-Salazar, 1997; Tierney & Venegas, 2006). Conversely, lower-income high schools may exhibit structural constraints that make it difficult for students to make informed decisions about the costs and benefits of borrowing. For example, the least informed counselors about college-related issues are typically found in lower-income schools (McDonough, 2005) and disbursing information about college costs and borrowing may not be a top priority for counselors employed at these types of high schools.

High school counselors represent an important, and often primary, source of financial aid information for all types of students. Findings suggest that high school students are more likely to have a better understanding of college costs and financing when they consult with trained counselors (McDonough & Calderone, 2006). However, many high school counselors appear to be relatively uninformed about college financial aid and are unsure of how to advise students regarding the amount to borrow (NACAC, 2007). Counselors also tailor the advice they provide based on their knowledge and assumptions about the students they work with (Dowd, 2008). For example, McDonough and Calderone (2006) found that many counselors assume that African American and Latino students are averse to using loans and therefore direct them to lower-cost community colleges. Collectively, these factors highlight the significant role of the school context in shaping students' attitudes and perceptions of borrowing and their actual borrowing behavior.

Layer 3: Higher Education Context

Layer 3 of the model addresses the higher education context and recognizes the major role that colleges and universities play in shaping students' college-related decisions (Perna, 2006a).

Applied to the present study, Layer 3 gives particular attention to the institutional characteristics (e.g. institutional type, tuition rates, geographic location) that may shape a student's decision to borrow and cumulative level of student loan. In addition, this layer examines how institutional resources and support systems can influence students' initial decision to borrow and their cumulative level of indebtedness.

The type of postsecondary institution a student attends can directly impact the extent of their debt burden. For the 2007-08 academic year, approximately 62% of graduates at public four-year institutions graduated with loan debt, compared to approximately 72% of graduates from private non-profits and 96% of private for-profit institutions (NPSAS, 2008). The average debt among graduates was \$20,200 at public four-year colleges, \$27,650 at private non-profits, and \$33,050 at private for-profits. In 2007-08, 48% of community college graduates (i.e. students earning an associate's degree) had student loan debt and the average debt among these borrowers was approximately half of the amount owed by borrowers graduating from public four-year institutions (Steele & Baum, 2009). Tuition rates vary greatly across different types of postsecondary institutions and students who attend higher-priced colleges and universities may be forced to borrowing more in order to complete their degree.

The geographic location of the college or university a student decides to attend can also shape his/her borrowing behavior. Most postsecondary institutions have published tuition rates for both in-state and out-of-state students, with the tuition charged to out-of-state students typically being significantly more expensive. Therefore, students who choose to enroll in an out-of-state college and do not receive generous grant aid that can help alleviate the total cost of attendance may find it necessary to use student loans to finance their education. In addition,

attending college in a city that has a relatively high cost of living may lead some students to acquire higher debt burden in route to earning their bachelor's degree.

Similar to the high school context addressed in Layer 2, the types of resources and support systems offered at higher education institutions can impact student borrowing behavior. Colleges and universities play a major role in providing students and their families with information about financial aid (Perna, 2006b), which can help guide their decisions about the use of student loans. College financial aid advisors are more likely than high school counselors to be knowledgeable about the costs and benefits of borrowing to pay for college. However, there may be vast differences across postsecondary institutions in the accessibility of these counselors and the types of information relayed to students about borrowing. While some colleges and universities offer their own institutional loan programs, others have taken steps to curtail their students' use of credit. For example, some community colleges have elected not to participate in the federal loan programs (Project on Student Debt, 2009). This institutional practice has the potential to significantly influence student borrowing.

Layer 4: Social, Economic, and Policy Context

Layer 4 of the contextual model assumes the broader social, economic, and policy context impacts student decision making about higher education. Applied to the present study, this layer provides a framework for understanding how economic conditions and changes in public policy can impact student borrowing and debt burden. This contextual layer also gives attention to how societal forces, such as “expectations about the distribution of the responsibility for paying for college costs and the media,” (Perna, 2008, pg. 1624) can influence the borrowing behavior of college students.

As noted in a previous section of this chapter, students and their families have been forced to pay a greater share of the total costs of higher education within the last two decades (Heller &

Rogers, 2006). This shift in the financial burden from federal and state governments to students reflects the idea that higher education is primarily a private privilege and not a public obligation. The current societal expectation that students, and not governments, should pay the majority of college costs has contributed to the rise in student borrowing and debt burden (Heller & Rogers, 2006). Furthermore, numerous media sources in recent years have portrayed the indebtedness of today's college students as a national crisis. Many of these media reports have profiled student borrowers who are facing serious financial hardships as a result of the excessive loan debt burden they accumulated while attending college. The media's predominately negative portrayal of student borrowing may deter some students from using loans to finance their college education.

Financial aid policies, especially those related to student loans, can significantly impact the borrowing behavior and debt burden of college students. For example, history has shown that changes in the eligibility requirements and maximum award amounts for the federal loan programs can trigger dramatic shifts in federal loan borrowing (King, 1999). The borrowing behavior of students pursuing some academic majors (e.g. education, social work) or career paths (e.g. military service, volunteer work) may be influenced by their intentions to take advantage of existing student loan forgiveness programs. In addition, the newly established Income-Based Repayment Plan may impact some students' attitudes towards federal loan borrowing since the program, "ensures that required federal education debt payments will never exceed 15% of the borrower's discretionary income and that any remaining debt will be forgiven after 25 years" (Steele & Baum, 2009, pg. 3) for borrowers who meet the program's eligibility requirements.

The economic context provides a lens for understanding how current economic conditions and characteristics can influence student borrowing and debt burden. The most recent economic

downturn and credit crunch has led to growing concerns that more students will face difficulties repaying their debt, and that the student default rate will increase (Pilon, 2008). For students who lost their jobs due to the economic recession, many of these individuals may have no choice but to rely on student loans in order to continue attending college. Furthermore, the current interest rates charged on different types of student loans (i.e. federal, private, state, institutional) can influence students' initial decision to borrow and their total debt burden.

Application of the Conceptual Model to the Present Study

Rather than relying solely on the economic models that have traditionally been used to examine student borrowing, the present study applies this promising new conceptual model that incorporates multiple theoretical perspectives and recognizes that decisions about borrowing occur within a situated context. The conceptual model offers a more comprehensive framework for examining the profusion of factors that can potentially influence a student's borrowing behavior and debt burden. While students do perform the cost-benefit comparison predicted by human capital theory when making decisions about borrowing for college, the model suggests that "assessments of the benefits and costs are shaped not only by the demand for higher education and supply of resources to pay the costs but also by an individual's habitus and, directly and indirectly, by the family, school, and community context, higher education context, and social, economic, and policy context" (Perna, 2006a, pg. 119).

Perna (2006b) suggests that because of the model's complexity, no one study can examine all of the potential relationships depicted in the conceptual model. The present study will focus on the individual (i.e. Layer 1) and institutional (i.e. Layers 2 and 3) variables available in the 2008 National Postsecondary Student Aid Study that can impact the cumulative level of student loan indebtedness among 2007-08 bachelor's degree graduates. There is a dearth of NPSAS:08 variables that address the current social, economic, and policy context (i.e. Layer 4) and

therefore the dataset has limited usefulness in estimating how this layer of the conceptual model influences student borrowing and debt burden. The model was, however, particularly useful for identifying relevant variables to be examined during statistical analysis. These variables and the statistical techniques used to conduct this study are addressed in detail in the subsequent chapter.

Chapter Conclusion

Rising tuition rates, the declining purchasing power of Pell Grants, and legislation that has increased the accessibility of federal loans has led to skyrocketing levels of indebtedness among today's college students. Loans are now the dominant source of student financial aid in the United States. The extant research literature related to student borrowing and debt burden has examined students' attitudes towards borrowing, predictors of student loan default, and trends in student loan borrowing. While numerous research studies and policy reports have strengthened our understanding of student indebtedness, several notable gaps in the existing research literature were addressed by the present study.

Perna's (2006a) model of college choice provided a new conceptual framework for examining student borrowing behavior and debt burden. The four layers of the conceptual model were described and relevant research was used to corroborate the applicability of the model in addressing the research questions guiding this study. The conceptual model was used as a lens to identify the demographic, familial, and institutional factors that influence student borrowing and that are associated with different levels of student loan debt burden among America's 2007-08 bachelor's degree graduates. A better understanding of these factors can lead to the development of policies and practices designed to protect today's college students from acquiring excessive loan debt and experiencing undue financial hardships after graduation.

CHAPTER 3 METHODOLOGY

The objective of this chapter is to describe the research methodology used to conduct this study. The chapter begins by revisiting the purpose and research questions guiding this study. The next section describes the data source and sample. Next, the dependent and independent variables used in this study are presented and operationally defined. The following section describes the statistical methods and techniques used to analyze these variables. Attention is then given to several methodological considerations that had important implications for the research design of this study and data analysis. Finally, this chapter concludes by addressing the limitations inherent to this study.

The purpose of the present study was to examine the decision to borrow and level of student loan indebtedness among 2007-08 bachelor's degree graduates. Particular attention was given to the borrowers who acquired the highest levels of debt in route to earning their degree. To that end, there was a primary research question and two sub-questions guiding this study:

What individual, familial, and institutional factors influenced the decision to borrow and overall level of student loan debt held by college students graduating with their bachelor's degree from United States postsecondary institutions during the 2007-08 academic year?

1. What individual, familial, and institutional factors are associated with 2007-08 bachelor's degree graduates' probability of borrowing through student loans?
2. What individual, familial, and institutional factors are associated with the total level of student loan debt among 2007-08 bachelor's degree graduates who borrowed?

Proposed Hypotheses

Based upon the research questions guiding this study and the extant literature pertaining to college student indebtedness, the following hypotheses are proposed:

1. Low-income students and some racial/ethnic minority groups are less likely to borrow through student loans than both White and high-income students. In particular, existing

research suggests that low-income, Hispanic, and Asian students are more averse to using loans to pay for college than other student groups (Burdman, 2005; Callender & Jackson, 2005; Cunningham & Santiago, 2008).

2. When they do borrow through student loans, racial/ethnic minority and low-income students are more likely to acquire higher levels of student loan debt than both White and high-income students. Specifically, existing research literature suggests African American and Hispanic students are likely to have the highest loan debt levels (King, 2005; King & Bannon, 2002; Price, 2004a, 2004b).

Data Source

The data analyzed in this study were derived from the National Center for Education Statistics (NCES) 2008 National Postsecondary Student Aid Study (NPSAS:08). At the time the present study was conducted, NPSAS:08 offered the latest and most comprehensive national-level data pertaining to students' use of loans to pay for college-related expenses. Since 1987, NPSAS has been administered every three to four years by the NCES division of the U.S. Department of Education. The study represents the most inclusive, nationally representative survey of student financing of higher education in the United States (Wei et al., 2009). Data collected from the NPSAS survey are designed to help researchers and policy analysts answer questions about the affordability of American higher education and understand how various sources of financial aid impact students.

NPSAS:08 was selected as the data source for this study for several reasons. First, I was interested in examining student loan borrowing among all of America's recent bachelor's degree graduates. No other existing data source provided the number of detailed variables related to student loan borrowing for this particular student population than NPSAS:08. Secondly, it would have been extremely time-intensive and expensive for me to develop and administer a survey instrument that could result in findings that were nationally representative. For these reasons, NPSAS:08 was the logical data source to use in order to address the research questions guiding this study.

College students attending all types and levels of institutions are represented in the NPSAS surveys, including public and private not-for-profit and for-profit institutions, community colleges, and four-year colleges and universities. For NPSAS:08, approximately 114,000 undergraduates and 14,000 graduate students were statistically selected from more than 1,600 postsecondary institutions. These students represent about 21 million undergraduates and 3 million graduate students enrolled in American higher education between July 1, 2007 and June 30, 2008 (Wei et al., 2009). Therefore, findings from the present study can be generalized to reflect the probability of borrowing and levels of student loan indebtedness among America's 2007-08 bachelor's degree graduates.

Like most NCES postsecondary datasets, the NPSAS studies are available through public access and restricted use (Hahs-Vaughn, 2007). Public access data is available online through a software application known as the Data Analysis System (DAS). This application allows users to generate descriptive tables and estimate covariance analyses from the NCES datasets. However, DAS does not provide the user with a complete list of variables from the NCES dataset of interest, nor does it allow for sophisticated manipulation of these variables. The restricted use data files for the NCES datasets allow users to perform more detailed analysis of the data. These files are available only through a restricted data license because of NCES confidentiality legislation (Hahs-Vaughn, 2007). Access to the complete restricted data file for NPSAS:08 was required to answer the research questions proposed by the present study. Therefore, I submitted the application for the NPSAS:08 restricted data license to the NCES in July 2009 and received the restricted data file in December 2009.

Sampling Design

Most national datasets utilize a complex survey design because they employ multistage, cluster, and/or stratified sampling strategies (Hahs-Vaughn, 2007). Simple random sampling

methods used by many small scale empirical research studies ensure each subject in the population has an equal probability of being included in the sample. In contrast, complex sampling designs used by many national datasets typically oversample subjects and institutions with particular characteristics of interest so they will have a higher probability of selection. Oversampling ensures these subjects and institutions are included in the sample in sufficient numbers for the purposes of statistical analysis (Thomas & Heck, 2001).

The sample for NPSAS:08 was established using a two-stage sampling design (Wei et al., 2009). The first stage identified the institutions that would be included in the sample from approximately 3,200 eligible United States postsecondary institutions. The institutional sampling frame was constructed from the IPEDS:2004-05 and 2005-06 Institutional Characteristics, Fall Enrollment, and Completion files. A total of 1,730 colleges and universities participated in NPSAS:08. The second stage of the sampling design involved selecting students from these 1,730 institutions. Sample institutions provided student enrollment lists that were used to construct the student sampling frame. In total, approximately 127,700 students participated in NPSAS:08. Detailed information about the sampling design is available in the NPSAS:08 methodology report.

Data Sample

The sample used for the present study consisted of NPSAS:08 undergraduates who earned their bachelor's degree during the 2007-2008 academic year ($n = 25,671$). This sample coincides with the NPSAS:08 variable named COLLGRAD, which used institutional records and student interviews to determine if the student completed his/her bachelor's degree program during this academic year. This sample was selected because I was specifically interested in the decision to borrow and level of student loan indebtedness among bachelor's degree graduates, and not necessarily the debt held by undergraduates who had not yet earned their four-year degree.

After applying the NPSAS:08 survey weight variable named WTA000, descriptive results revealed the sample used in this study represents 2,194,518 students who earned their bachelor’s degrees from U.S. postsecondary institutions during the 2007-08 academic year. However, conducting statistical analysis using such a large number of cases poses greater risk for committing Type I errors (Thomas & Heck, 2001). Therefore, a normalized weight was calculated by dividing the raw weight variable (i.e. WTA000) by the mean weight for the selected sample of bachelor’s degree graduates. Using a normalized, or relative, weight when analyzing large, secondary datasets is a common practice among researchers and helps correct for oversampling in the survey design (Hahs-Vaughn, 2005; Thomas & Heck, 2001). The normalized weight reduces the overall sample size for statistical purposes, but still preserves the appropriate proportions of the complex survey design. In this study, the normalized weight was used to conduct all statistical analysis.

The following tables provide descriptive information about the sample using several key demographic variables. As depicted in Table 3-1, greater than half (56.8%) of America’s 2007-08 bachelor’s degree graduates were female. With regards to race/ethnicity (see Table 3-2), the majority of all graduates were White (68.5%) and the next largest groups were Hispanic/Latino (10.7%), Black (10.1%) and Asian (7.3%). Only these four racial/ethnic groups were included in the analysis because of the difficulty in conducting statistical analysis with relatively small numbers of students belonging to the other racial/ethnic groups (i.e. American Indian, Native Hawaiian, more than one race).

Table 3-1. Frequency of gender (n=25,671)

| | Gender | |
|--------|-----------|---------|
| | Frequency | Percent |
| Male | 11099 | 43.2 |
| Female | 14572 | 56.8 |

Table 3-2. Frequency of race/ethnicity (n=24,779)

| | Race/ethnicity | |
|---------------------------|----------------|---------|
| | Frequency | Percent |
| White | 17577 | 68.5 |
| Black or African American | 2590 | 10.1 |
| Hispanic or Latino | 2737 | 10.7 |
| Asian | 1874 | 7.3 |

Table 3-3 provides information about the dependency status for the students in the sample. The greatest percentage of America’s 2007-08 bachelor’s degree graduates were considered dependents (58.3%) for federal financial aid need analysis purposes. Students who were considered independent (i.e. not reliant upon their parents for financial support) and did not have dependents of their own represented 24.9% of all graduates. The smallest percent of graduates (16.8%) were independent and did have dependents. For the purposes of the NPSAS:08, spouses of independent students were not considered as dependents.

Table 3-3. Frequency of dependency status (n=25,671)

| | Dependency status | |
|--------------------------------|-------------------|---------|
| | Frequency | Percent |
| Dependent | 14997 | 58.3 |
| Independent without dependents | 6388 | 24.9 |
| Independent with dependents | 4306 | 16.8 |

I also examined the types of postsecondary institutions students in the sample graduated from during the 2007-08 academic year (see Table 3-4). The greatest number of students earned their bachelor’s degree from a public four-year college or university (60.6%), or a private not-for-profit college or university (27.5%). A smaller percentage of students (3.3%) earned their degree from a private for-profit institution. Bachelor’s degree graduates who attended more than one institution during the 2007-08 academic year were omitted from data analysis. Furthermore, graduates from postsecondary institutions classified as public two-year were excluded from this study because of the small number of students belonging to this group. While not included in this study, these particular graduates likely reflect the growing trend by community colleges across

the country to offer baccalaureate degree programs in selected academic disciplines (Floyd & Walker, 2009; McKinney & Morris, 2010).

Table 3-4. Frequency of institution sector (n=23,457)

| | Institution Sector | |
|-------------------------------|--------------------|---------|
| | Frequency | Percent |
| Public 4-year | 15552 | 60.6 |
| Private not-for-profit 4-year | 7070 | 27.5 |
| Private for-profit | 835 | 3.3 |

Dependent Variables

Two dependent variables were used in this study to examine, (a) students' decision to borrow, or not borrow, through any type or combination of student loans (i.e. federal, private, state, and/or institutional) and, (b) the total amount of student loan debt borrowers accrued in route to earning their bachelor's degree. Table 3-5 provides a summary of these two dependent variables.

Table 3-5. Summary of dependent variables

| | NPSAS Source Variable | Variable Type | Scale Range |
|--|-----------------------|---------------|----------------------|
| Borrowed through any type of student loan | CUMLNTP1 | Dichotomous | Recoded: 0=No, 1=Yes |
| Amount still owed on all undergraduate student loans | OWEAMT1 | Continuous | \$147 – \$150,000 |

The NPSAS:08 variable named CUMLNTP1 and labeled 'cumulative loan type for undergraduate' was used to address the first research question guiding this study. Originally, this variable indicated whether the student had borrowed (a) federal loans only, (b) non-federal loans, (c) federal and non-federal loans, or (d) no loans ever. This variable was recoded into a dichotomous (a) borrowed through any type of student loan (i.e. federal, private/non-federal, or both) or (b) no student loans ever. I recoded this variable to determine whether or not the graduates in the sample had ever borrowed any type or combination of student loans. This dependent variable was used to examine the factors associated with students' probability of borrowing through federal, private, state, and institutional loans. Table 3-5 provides frequencies

for this variable and indicates that approximately two-thirds (65.2%) of America’s 2007-08 bachelor’s degree graduates borrowed through student loans in route to earning their degree.

Table 3-5. Frequency of borrowing among 2007-08 (n=25,671)

| | Student Loan Borrowing | |
|------------------------------|------------------------|---------|
| | Frequency | Percent |
| Borrowed student loans | 16740 | 65.2 |
| Never borrowed student loans | 8931 | 34.8 |

The second dependent variable measured the ‘amount still owed on all undergraduate loans’ for students in the sample. This continuous measure is denoted by the variable name OWEAMT1 in the NPSAS:08 dataset. The variable is based on the higher of an estimate derived from student interviews, the National Student Loan Data System, cumulative federal loan amount outstanding plus private loans borrowed in 2007-08, or the amount borrowed in 2007-08 from any source. This dependent variable allowed for identification of the cumulative level of federal and non-federal loan debt still owed by 2007-08 bachelor’s degree graduates, and was used to address the second research question guiding this study.

The sample used to examine the second research question was delimited to graduates who had borrowed through student loans and still owed money on their loans at the time of their graduation (n=16,333). Table 3-6 provides descriptive information for this dependent variable and indicates the average outstanding amount of student loan debt among 2007-08 bachelor’s degree graduates who borrowed was \$23,243.

Table 3-6. Descriptives for amount still owed on all undergraduate loans (n=16,333)

| | Minimum | Maximum | Median | Mean | SD |
|--|---------|---------|----------|----------|----------|
| Amount still owed on all undergraduate loans | 147 | 150000 | 20000.00 | 23242.81 | 16727.16 |

Independent Variables

The conceptual framework was used to select the independent variables to be included during statistical analysis. The independent variables were organized into categories based upon

the different contextual layers presented in Perna's (2006a) model. Table 3-7 summarizes each of the independent variables used in this study.

Table 3-7. Summary of independent variables and indices

| Items | Variable Type | Scale |
|---|-------------------|---|
| Gender | Dichotomous dummy | Male (reference), Female |
| Race/ethnicity | Categorical dummy | White (reference), Black or African American, Hispanic or Latino, Asian |
| Dependency status | Categorical dummy | Dependent (reference), Independent without dependents, Independent with dependents |
| English as primary language | Dichotomous dummy | Recoded: Yes (reference), No |
| Parent's level of education | Categorical dummy | Recoded: High school diploma or less, Associate's, Bachelor's, Advanced degree (reference) |
| Discussed financial aid options with parents or family | Dichotomous dummy | Yes (reference), No |
| Discussed financial aid options with financial aid counselor or staff | Dichotomous dummy | Yes (reference), No |
| ACT derived composite score | Categorical dummy | Recoded: 18 or lower, 19-25, 26 or higher (reference) |
| College grade point average | Categorical dummy | Recoded: Less than 3.0, 3.0 or higher (reference) |
| Family income | Categorical dummy | Recoded: \$18,787 or less (Low), \$18,788 to \$51,043 (Mid-Low), \$51,044 to \$93,643 (Mid-High), \$93,644 or more (High, reference) |
| Unmet financial need after all grants | Categorical dummy | Recoded: No unmet need (reference), \$1 to \$3,084 (Low), \$3,085 to \$6,983 (Mid-Low), \$6,984 to \$12,861 (Mid-High), \$12,862 or higher (High) |
| Field of study/academic major | Categorical dummy | Recoded: Humanities, Social/behavioral sciences, Life/physical sciences, Math/computer science/engineering, Education, Business/management (reference), Health, Vocational-Tech |
| Highest level of education ever expected | Categorical dummy | Recoded: Bachelor's or less, Master's, Doctorate or first professional (reference) |
| Institution type | Categorical dummy | Recoded: Public 4-year (reference), Private not-for-profit 4-year, Private for-profit 4-year |
| High school type | Categorical dummy | Public (reference), Private, Attended a foreign high school |
| Institution degree of urbanization | Categorical dummy | Recoded: City (reference), Suburb, Town, Rural |
| Institution region | Categorical dummy | Recoded: New England/Mid East (reference), Great Lakes/Plains, Southeast, Southwest, Rocky Mountains/Far West |

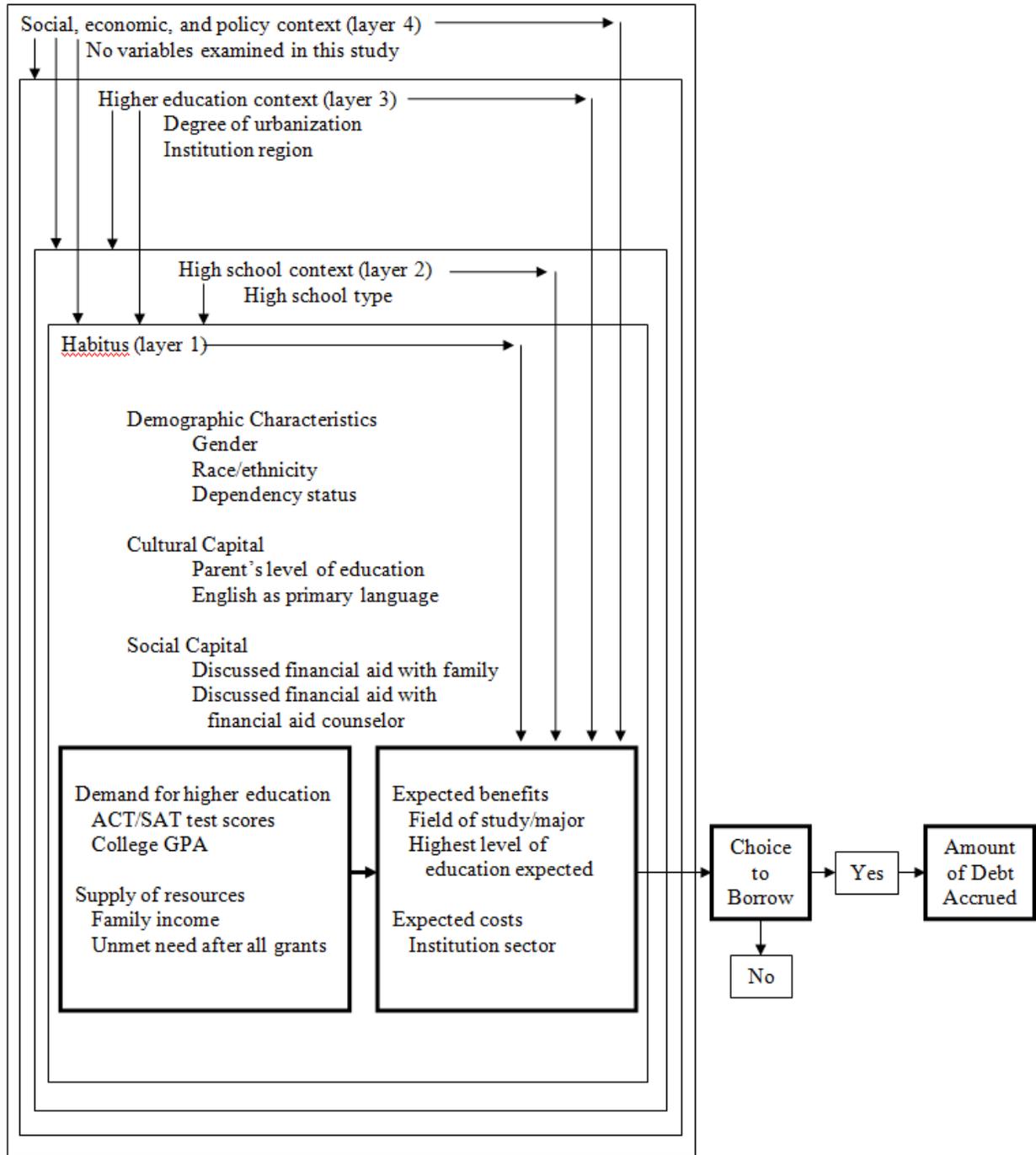


Figure 3-1. NPSAS:08 variables depicted within the conceptual model

Figure 3-1 depicts how the independent variables used in this study fit within the layers of the conceptual model. Existing research literature on student loan borrowing and indebtedness provided the rationale for selecting the independent variables used in this study. In the following subsections, the independent variables are presented and operationally defined based upon the

contextual layers of the conceptual model guiding this study. Most of the independent variables included in this study were transformed into dummy variables for the purposes of statistical analysis. For the dummy-coded variables, the reference group is indicated in parentheses.

Layer 1: The Student and Family Context

Individual and familial characteristics that may potentially influence students' attitudes towards borrowing and their cumulative level of loan indebtedness are major components of the conceptual model. These variables are assumed to impact students' assessment of the costs and benefits of borrowing through student loans to pay for college. The following sections addressing Layer 1 of the conceptual model identify the independent variables related to students' demographic characteristics, social and cultural capital, demand for higher education and supply of financial resources, and expected benefits and costs of pursuing higher education.

Demographic Characteristics

Numerous research studies and policy reports have examined the impact of gender and race/ethnicity on student borrowing behavior and loan debt burden. Several studies have found that females are more likely than males to acquire higher levels of student loan debt (Kantrowitz, 2009; Price, 2004a). Therefore, the NPSAS:08 variable 'Gender' was analyzed to compare differences in borrow and levels of student loan debt between male (reference group) and female 2007-08 bachelor's degree graduates.

A student's race/ethnicity has been identified as a salient factor in predicting loan borrowing behavior among undergraduates. Research suggests that Asian and Latino students are more averse to borrowing through student loans than other racial/ethnic groups (Callender & Jackson, 2005; Cunningham & Santiago, 2008). Furthermore, researchers have found that African American and Hispanic borrowers are most likely to acquire higher levels of loan debt burden (Kantrowitz, 2009; King, 2005; King & Bannon, 2002; Price, 2004a). The NPSAS:08

variable ‘race/ethnicity’ was used to examine the decision to borrow and loan debt levels among four racial/ethnic groups: White (reference group), Black, Latino, and Asian.

Research also suggests that independent students have higher levels of student loan debt than dependent students (Kantrowitz, 2009). Independent students are typically non-traditional aged students and are more likely to have additional expenses (e.g. families, mortgages, credit card debt) than dependent students. Accordingly, the NPSAS:08 variable ‘dependency status’ was included to examine differences in student loan borrowing and debt burden among three groups: dependents (reference group), independents without dependents, and independents with dependents.

Social and cultural capital

The amount of social capital a student possesses can influence their borrowing behavior by providing him/her with information about the costs and benefits of borrowing through student loans, and by providing him/her with assistance in applying for financial aid. The NPSAS:08 dataset was limited with regards to measures that have been used in prior financial aid studies to represent social capital. However, the dataset did contain several variables related to students’ acquisition of financial aid information. Two of these variables were used as proxies for students’ social capital in this study.

The two NPSAS:08 survey items related to social capital were ‘yes or no’ responses stemming from the following survey question: When you were making decisions about financial aid, which of the following did you do?: (1) discussed options with family and/or friends, (2) talked with a counselor or financial aid office staff in high school or college. These variables give particular attention to the assistance students may have received from parents, friends, or counselors during the financial aid process. Including these measures allowed me to examine how students’ social capital, as indicated by the information about financial aid they collected

through their social networks, influenced their probability of borrowing and cumulative level of student loan debt.

A student's level of cultural capital, as depicted in the conceptual model, is represented by cultural knowledge and the value placed on higher education by the student and his/her family. Two NPSAS:08 variables were examined related to students' cultural capital for the purposes of this study. Since research suggests that language barriers can hinder students' understanding of financial aid processes (Singer & Paulson, 2004), the dichotomous NPSAS:08 variable that indicated whether or not 'English was the primary language spoken at home' was also included. The reference group for this variable was students who indicated that English was the primary language spoken in their homes.

The level of education held by one's parents may represent a proxy for both cultural knowledge and values about college attainment (Perna & Titus, 2004). Research has found that parents' level of education can influence the amount of loan money a student borrows in route to earning their bachelor's degree (Kantrowitz, 2009). Therefore, the NPSAS:08 variable 'parents' highest education level' was examined in this study as a measure of cultural capital. This variable indicates the highest level of education achieved by either parent of the student and was recoded into three categories: less than a bachelor's degree, bachelor's degree, and advanced degree (i.e. master's, doctorate, or first professional; reference group).

Students' demand for higher education

Paulsen (2001) suggests that differences in students' college-related decisions are often the result of variations in the factors that shape students' demand for human capital acquisition. A student's academic preparation and achievement represents his/her initial stock of human capital (Perna, 2006a) and these factors can impact his/her demand for higher education. Applied to the present study, the conceptual model suggests that a student's academic preparation for college

and academic performance during college can influence their choice to borrow through student loans and the total amount they borrow in route to earning their bachelor's degree. Students with a higher demand for postsecondary education may be more willing to borrowing in order to make attending and graduating from college a reality.

A student's academic achievement in high school and during college may impact their decision to borrow through student loans and their cumulative level of indebtedness. Numerous higher education studies have used standardized test scores (e.g. Perna & Titus, 2004) and grade point averages (e.g. Flint, 1997; Harrast, 2004) as a measure of students' academic achievement. Therefore, the NPSAS:08 variable 'ACT derived composite score' was used in this study as one measure of students' academic achievement. In addition to using ACT scores for students who completed this test, this variable also converted students' SAT combined score into an estimated ACT composite score. The advantage of using this variable is that it allowed me to examine test scores for all of the students in the sample using a consistent measurement scale. This variable was recoded into three categories for the purposes of statistical analysis: 18 or less, 19 – 25, and 26 or above (reference group).

In addition, the NPSAS:08 variable 'college grade point average' was analyzed in this study as a measure of academic achievement. Existing research suggests that lower grade point averages in college are associated with higher levels of loan debt (Harrast, 2004) and greater risk of student loan default (Christman, 2000; Volkwein & Szelest, 1995) among undergraduate borrowers. This continuous NPSAS:08 variable was recoded into the following two categories based upon a 4.0 grading scale: less than 3.0, and 3.0 or higher (reference group).

Supply of resources

A student's supply of financial resources is particularly relevant in determining the total amount of money he/she borrows in order to pay for college-related expenses. Students with

limited financial resources are expected to rely more heavily on student loans than their more affluent peers. The conceptual model suggests that both family income and the amount of financial aid received are important indicators of an individual's supply of financial resources.

Family income can exert a strong influence on the total amount of debt an undergraduate borrower accrues in route to earning their bachelor's degree. In particular, researchers have corroborated that students from lower-income families are more likely to acquire unmanageable levels of loan debt than students from middle or high-income families (Dynarski, 1994; Price 2004a). The NPSAS:08 variable 'adjusted gross income (AGI)' was used as measure of the student's family income in this study. This variable provides the AGI for the parents of dependent students, and the AGI of independent students (and their spouses if applicable). This continuous variable was recoded into quartiles for the purposes of statistical analysis: \$18,787.99 or less (Low), \$18,787 to \$51,043.99 (Mid-low), \$51,044 to \$93,644.36 (Mid-high), and \$93,644.37 and above (High, reference group).

The amount of financial aid a student receives can significantly influence their borrowing behavior through student loans. In particular, researchers have found that students with higher levels of unmet financial need after all grant awards are taken into account are more likely to borrow through loans (Cunningham & Santiago, 2008). Therefore, the NPSAS:08 continuous variable 'student budget after all grants' was included in this study. This variable measures the remaining cost of attendance (i.e. tuition and non-tuition related expenses) during the 2007-08 academic year students in the sample after taking into consideration each student's total grant aid (i.e. need-based grants, merit-based scholarships, employer tuition reimbursements, and private scholarships). This variable was recoded into the following predetermined quartiles based upon an earlier descriptive analysis of this NPSAS measure: \$0 (No unmet need, reference group), \$1

to \$3,084.99 (Low), \$3,085 to \$6,983.75 (Mid-low), \$6,983.76 to \$12,861.50 (Mid-high), and \$12,861.51 and above (High).

Expected benefits

As depicted in the conceptual model, each of the contextual layers influences a student's assessment of the benefits and costs of borrowing to pay for college. Two NPSAS:08 variables were examined that may impact an individual's calculation of the expected benefits of using student loans. Students pursuing higher-earning majors may expect greater benefits from their investment in higher education (Flint, 1997; Harrast, 2004; Price, 2004a), and thus be more willing to borrow through student loans in order to finance their bachelor's degree. Therefore, the NPSAS:08 variable 'field of study/major' was recoded into the following eight categories for the purposes of statistical analysis: humanities, social/behavioral sciences, life/physical sciences, math/computer science/engineering, education, business/management (reference group), health, and vocational/technical/professional.

Research also suggests that a student's academic aspirations and goals can impact their perceived benefits of investments in higher education (Perna, 2006a). Undergraduates who expect to earn a graduate or professional degree in the future may be more willing to acquire student loan debt in order to achieve their long-term academic goals. Accordingly, the NPSAS:08 variable 'highest level of education ever expected' was recoded into three categories and included in this study as a second measure of students' expected benefits of borrowing for college. These categories were: bachelor's degree or less, master's degree, and doctorate or first professional degree (reference group).

Expected costs

Existing research has shown that the total cost of attendance can influence students' loan borrowing behavior (Cunningham & Santiago, 2008; Kantrowitz, 2009). Numerous studies and

policy reports have examined student borrowing as a function of the type of postsecondary institution attended. Findings suggest average loan debt levels are typically higher for students who graduate from private and for-profit institutions (College Board, 2008; Kantrowitz, 2009; Steele & Baum, 2009). Therefore, a three-category variable for ‘institution sector’ was included to examine student loan borrowing among students graduating from the following institution types during the 2007-08 academic year: public four-year (reference group), private not-for-profit four-year, and private for-profit four-year.

Layer 2: School and Community Context

Layer 2 of the conceptual model gives particular attention to students’ high school context. Research has shown that high school characteristics can shape students’ perceptions about using loans to pay for college (Perna, 2008). The NPSAS:08 dataset is limited with regards to variables that specifically examined the availability of resources and the types of structural supports and barriers that exist within the students’ high schools. However, the dataset does contain a key variable that indicates the ‘type of high school attended’ for the students in the sample. This variable was included during data analysis and addressed whether the student graduated from a public (reference group), private, or foreign high school.

Layer 3: Higher Education Context

The higher education context of the model examines how the characteristics of the colleges and universities students attend can impact their borrowing behavior. The Project on Student Debt (December 2009) found differences in loan debt levels for students attending higher education in different geographic locations across the country. To examine the potential influence of an institution’s geographic location on student borrowing behavior (Project on Student Debt, December 2009), the NPSAS:08 variables ‘degree of urbanization’ and ‘institution region’ were included in this study. The ‘degree of urbanization’ variable was recoded and used

to examine student loan borrowing as a function four different categories: city (reference group), suburb, town, and rural. In addition, the ‘institution region’ variable was recoded into five categories for the purposes of statistical analysis: New England/Mideast (reference group), Great Lakes/Plains, Southeast, Southwest, and Rocky Mountains/Far West.

Layer 4: Social, Economic, and Policy Context

The fourth layer of the conceptual model gives attention to the economic and public policy characteristics that may influence borrowing behavior among college students. As described in Chapter 2, the media’s negative portrayal of student borrowing, changes in student loan policies, and economic downturns can all potentially impact students’ attitudes towards borrowing and their cumulative level of debt burden. However, a limitation of NPSAS:08 with regards to the present study is that the dataset does not contain variables that directly address this contextual layer of the model. The present study, therefore, focused more specifically on concepts within Layers 1, 2, and 3 of the model may be associated with student loan borrowing and debt levels.

Methodological Considerations

Before describing the statistical techniques that were used during data analysis, there are two methodological considerations pertaining to the research design and focus of the present study that deserve attention. Existing research corroborates the importance of addressing each of these methodological challenges (Cellini, 2008; Dowd, 2008; Hahs-Vaughn, 2007; Thomas & Heck, 2001). The following subsections address these methodological considerations in greater detail.

Analyzing Secondary Datasets

Researchers have documented the methodological challenges inherent in using large-scale, secondary datasets like the one being utilized for this study (Hahs-Vaughn, 2007; Thomas & Heck, 2001; Thomas, Heck, & Bauer, 2005). When using NCES restricted data files, such as

NPSAS:08, it is imperative for researchers to understand design effects and weights in order to ensure the data is analyzed correctly (Hahs-Vaughn, 2007). Since the complex survey design of NPSAS:08 oversampled some cases (i.e. institutions, students) with particular characteristics, researchers need to account for the homogeneous clusters that may result from this type of sampling. Ignoring this complex sampling design leads to “overly conservative estimates of standard errors and the heightened potential for committing Type I errors in hypothesis testing” (Thomas & Heck, 2001, p. 534). Researchers have advocated for the use of complex sample survey software to overcome this particular methodological challenge (Hahs-Vaughn, 2005; Thomas & Heck, 2001).

Accordingly, SPSS 18.0 Complex Samples software was utilized for the purposes of this study. This relatively new add-on to basic SPSS software is specifically designed to produce correct estimates for data collected through complex sampling methods, such as data collected through NPSAS and many other NCES and National Science Foundation (NSF) surveys. This software was chosen over other existing programs (e.g. AM, a free software from the American Institutes for Research) because of my familiarity with SPSS. The Complex Samples add-on was used to conduct all of the data analyses for this study.

Since the NCES datasets do not use simple random sampling techniques, weights and design effects are used to ensure the data is representative of the national population (Hahs-Vaughn, 2007). Weights and design effects are applied during data analysis to deemphasize the disproportionate contribution of the cases or subjects that were oversampled in the complex sampling design (Thomas & Heck, 2001). Failure to apply the weights and design effects ignores the complex survey design and will result in analyses that reflect the sample, but not the larger population of interest. Analyzing NCES data without using the weights can also violate the

independence assumption and generate parameter estimates that are biased (Thomas & Heck, 2001).

The weights provided in NPSAS:08 restricted data file are intended to compensate for the unequal probability of selection of postsecondary institutions and students that comprise the final sample used for the survey. In addition, these weights and design effects adjust for multiplicity at the institutional and student levels, unknown student eligibility, nonresponse, and poststratification (Wei et al., 2009). The NPSAS:08 methodology report provided detailed information about the specific purpose and uses of each weight included within the dataset. The methodology report and existing research studies (see Hahs-Vaughn, 2005 & 2007; Thomas & Heck, 2001) were utilized to ensure the normalized weight for the sample was calculated correctly and applied accurately during data analysis. As mentioned previously in this chapter, this normalized weight was used to conduct all of the statistical analysis for this study.

Estimating Causal Effects with Secondary Data

In recent years, several researchers have documented the statistical challenges associated with accurately estimating causal effects in higher education and financial aid research using secondary data (Chen, 2008; Cellini, 2008; Dowd, 2008; Titus, 2007). Like most social science and educational research, higher education studies cannot typically employ experimental designs or randomized trials because of logistical, ethical, political, and economic reasons (Titus, 2007). Consequently, most higher education researchers rely heavily on secondary data and researchers must be aware of the statistical challenges and limitations inherent in using these types of data to claim causality (Titus, 2007).

The primary statistical problem plaguing higher education research, including financial aid studies, is self-selection bias (Cellini, 2008; Dowd, 2008; Titus, 2007). Self-selection means that one or more independent variables included in the statistical model is potentially a ‘choice’

variable that is correlated with the outcome of interest (Millimet, 2001). Failure to control for this correlation during statistical analysis is problematic because it can result in model misspecification and inaccurate coefficient estimates (Titus, 2007).

For higher education researchers using large, secondary datasets (e.g. NCES and NSF datasets), omitted variable bias is a statistical concern that can result in self-selection bias. Omitted variable bias occurs when an independent variable that might influence the outcome variable is not included in the regression model (Cellini, 2008). While NCES and other secondary datasets may offer a wealth of variables, one criticism of these datasets is they may not provide sufficient information about complex constructs to allow researchers to disentangle the effect of student characteristics that led them to make certain choices about college (Dowd, 2008; Perna & Titus, 2005). Without accounting for these variables in the regression model, omitted variable bias may result in unreliable estimates because one or more independent variables in the regression model are correlated with the error term.

Proxy variables were utilized to reduce omitted variable bias in the present study. The use of proxy variables represents one of the simplest and most common methods for dampening omitted variable bias in higher education research (Cellini, 2008). A proxy variable is a measurable or observable variable that is used in place of a variable that is unobservable. In order to serve as a useful proxy, the variable must be irrelevant in explaining the outcome variable once the other independent variables in the model have been controlled for and it must be sufficiently closely related to the omitted variable (Cellini, 2008). Examples of proxy variables that have been used in higher education research include test scores as proxies for ability and postsecondary plans as proxies for aspirations (St. John, 1990).

In the present study, the NPSAS:08 dataset provided several variables to sufficiently measure most of the concepts embedded within the four contextual layers of the conceptual model. Many of the demographic and institutional variables used in this study have been examined in existing research studies of student financial aid, including some studies of student loan borrowing. However, the NPSAS:08 dataset does not contain variables that have been used in prior studies to specifically measure the complex construct of social capital described within Layer 1 of the model. Applied to the present study, social capital refers to the information a student possesses about financial aid and the level of assistance they receive from their social networks (e.g. parents, friends, high school and college counselors) regarding financial aid.

After reviewing all of the available variables in the NPSAS:08 dataset, two dichotomous measures were selected as reasonable proxies for a student's level of social capital for the purposes of this study. These variables represent students' acquisition of financial aid information and the support they received from family, friends, and/or counselors when making decisions about financial aid. This proxy variable captures the major elements of social capital as described in Perna's model (2006a), and as Wooldridge (2002) suggests, even a reasonable imperfect proxy can help reduce omitted variable bias. By including these proxy variables during data analysis, it was possible to examine the role a student's level of social capital plays in their probability of borrowing and cumulative level of student loan debt.

Analytic Methods

This section provides an overview of the analytic methods that were performed to address the research questions guiding this quantitative study. Two stages of data analysis, preliminary and advanced, were conducted to generate the results presented in the following chapter.

Preliminary Data Analysis

The preliminary analysis included descriptive statistics, t-tests, and ANOVAs for student level and institutional level data. Descriptive statistics were utilized to examine the frequencies of students' demographic characteristics and the types of postsecondary institutions students' graduated from during the 2007-08 academic year. In addition, descriptive analysis was used to examine the frequencies of the two dependent measures in this study. These descriptives helped identify the percentage of all graduates who borrowed through student loans and the average level of student loan debt held by 2007-08 bachelor's degree graduates who did borrow.

Chi-squares, t-tests, and analysis of variances (ANOVA) were performed to examine mean differences in the two dependent variables with regards to key demographic and institutional characteristics. Specifically, chi-square tests were used to examine the decision to borrow through student loans (i.e. yes or no) by the following categorical independent variables: gender, race/ethnicity, dependency status, family income, and institution type. T-tests and ANOVAs were used to examine mean differences between these same independent variables the continuous dependent measure indicating the amount borrowers still owed on their student loans. Statistically significant findings from the chi-squares, t-tests, and ANOVAs provided justification for conducting more advanced statistical procedures.

Advanced Data Analysis

Advanced data analysis included one logistic multivariate regression and one linear multivariate regression. Specifically, logistic multiple regression was used to address the first research question guiding this study. This research question sought to identify the factors that influenced students' choice to borrow, or not borrow, through student loans in route to earning their bachelor's degree. Since the dependent variable of interest in this research question was dichotomous and there were multiple independent variables, logistic regression was the most

appropriate statistical technique (Shavelson, 1996). Logistic regression allowed for an examination of multiple individual and institutional level factors that can influence students' probability of borrowing through student loans.

Linear multiple regression was used to address the second research question guiding this study. The continuous nature of the dependent variable of interest in this question justified the use of linear regression techniques (Shavelson, 1996). The linear regression model examined the individual and institutional level factors related to the cumulative amount of student loan debt among 2007-08 bachelor's degree graduates who borrowed.

Table 3-8. Summary of multivariate regression models

| Independent Variables | Block 1 | Block 2 | Block 3 | Block 4 | Block 5 | Block 6 | Block 7 |
|--------------------------------------|------------|------------|------------|------------|------------|------------|------------|
| <i>Demographic Characteristics</i> | | | | | | | |
| Gender | X | X | X | X | X | X | X |
| Race/ethnicity | X | X | X | X | X | X | X |
| Dependency status | X | X | X | X | X | X | X |
| <i>Social and Cultural Capital</i> | | | | | | | |
| Parent's level of education | | X | X | X | X | X | X |
| English as primary language | | X | X | X | X | X | X |
| Discussed F.A. with parents | | X | X | X | X | X | X |
| Discussed F.A. with counselor | | X | X | X | X | X | X |
| <i>Demand for Higher Education</i> | | | | | | | |
| ACT derived composite score | | | X | X | X | X | X |
| College GPA | | | X | X | X | X | X |
| <i>Supply of Resources</i> | | | | | | | |
| Family income | | | | X | X | X | X |
| Unmet need after all grant aid | | | | X | X | X | X |
| <i>Expected Benefits</i> | | | | | | | |
| Field of study/major | | | | | X | X | X |
| Highest level of education exp | | | | | X | X | X |
| <i>Expected Costs</i> | | | | | | | |
| Postsecondary institution type | | | | | | X | X |
| <i>Institutional Characteristics</i> | | | | | | | |
| High school type | | | | | | | X |
| Degree of urbanization | | | | | | | X |
| Institution region | | | | | | | X |

The independent variables used in this study were organized into seven blocks and added in succession to a baseline model to be regressed against each of the dependent variables (see Table 3-8). The advantage of utilizing a hierarchical blocked entry approach is that it allows

researchers to group related categories of independent variables based upon a theoretical rationale. The seven blocks are based upon the adapted version of Perna's model of college choice (2006a) used as a conceptual framework in this study to examine the choice to borrow and level of student loan indebtedness among 2007-08 bachelor's degree graduates. The baseline model (Block 1) for the multivariate regressions conducted in this study was:

$$\hat{Y} = \beta_0 + \beta_1(\text{gender}) + \beta_2(\text{race/ethnicity}) + \beta_3(\text{dependency status}) + \dots + \beta_n + e_1$$

In this model, Y represents a single dependent variable (i.e. borrowed or did not borrow; cumulative level of student loan debt), β the coefficient, and e the constant or error term.

Regression Diagnostics

Regression diagnostics were performed in order to determine the adequacy of the regression models used in this study. First, I examined the distribution of the continuous dependent variable (i.e. cumulative amount of loan debt) used to address the second research question. As anticipated, the distribution indicated a positively skewed curve since a small, but unfortunately growing, number of bachelor's degree graduates are acquiring extremely high (e.g. \$75,000 or more) levels of loan debt. Common statistical methods used to address issues of non-homogeneity of variance involve transforming the data by applying a mathematic modification such as the square root, log, or inverse (Osborne, 2002). After applying each of these transformations using SPSS, the output indicated that the square root function resulted in a normal distribution of this dependent variable.

However, the transformation procedure fundamentally changed the nature of the variable and made interpretation of the results more complex (Osborne, 2002). In particular, after performing the square root modification the estimated coefficients for this dependent variable were no longer substantively interpretable in terms of dollar amounts. That is, the results of this regression using the transformed data could only be discussed in terms of debt levels that were

either higher or lower than the designated reference group for each independent variable. I believed presenting the results in this manner would reduce the overall contribution of this study to the existing research literature on student loan borrowing.

To address this issue, I ran the linear multivariate regression model both with and without applying the transformation to the dependent variable. Examination of the results indicated that the level of statistical significance for the independent variables was consistent across both models. That is, the same variables that were statistically significant in the model that applied the data transformation remained significant in the model that did not apply the square root transformation. Therefore, I made the decision to present and discuss the coefficients from the regression model without the data transformation since discussing students' cumulative loan debt in terms of dollars is more meaningful for policymakers and researchers.

Next, collinearity statistics were examined to determine if any of the independent variables analyzed in this study were highly correlated. Multicollinearity occurs when two or more independent variables are highly correlated with one another and can lead to unstable estimated coefficients (Chen, 2008). In regression, the variance inflation factor (VIF) can be used to determine if the degree of correlation among the independent variables is problematic (Myers & Well, 2003). Larger VIF levels often signify problems with multicollinearity in the regression model and a commonly recommended threshold is a VIF of 10. In this study, the VIF levels of the independent variables in both regression models (i.e. the logistic and linear) were well-below this threshold.

Once these diagnostic procedures were performed, I examined the overall efficacy of the final logistic and linear regression models used in this study. In particular, the F tests were

reviewed to determine the goodness-of-fit for each regression model. Statistically significant F values corroborated the efficacy of both the logistic and linear regression models.

In recent years, researchers have encouraged the inclusion of interaction terms in studies of student financial aid (Chen, 2008; Dowd, 2008). An interaction effect occurs when levels of a particular variable change in relation to levels of a second variable (Huck, 2004). Failure to account for this interaction can result in results that have a “main effect” bias (Chen, 2008). For example, Dowd (2008) suggests that differences in student loan borrowing behavior may exist by students’ race/ethnicity and socioeconomic status. Therefore, the interaction effect between race/ethnicity and family income was explored for the purposes of this study. These terms were added to each of the regression models to examine their effect on students’ probability of borrowing and level of indebtedness. When analyzed, analysis of the change in R^2 revealed the interaction terms did not improve the efficacy of either model. For that reason, interaction terms were not included in the final regression models that generated the results presented in the following chapter.

Limitations of the Study

There are several limitations to the present study that deserve attention. Like many of the NCES datasets, the data represented in NPSAS:08 are cross sectional and not longitudinal. The cross sectional nature of the dataset did not allow me to examine trends in student borrowing across different time points. The findings presented in this study, therefore, represent a ‘snapshot in time’ of the borrowing behavior and levels of student loan debt among 2007-08 bachelor’s degree graduates.

Some researchers have argued that many large, secondary datasets often do not contain important psychological variables that may impact students’ borrowing behavior (Dowd, 2008). For example, personal characteristics such as self-efficacy and locus of control may influence a

student's initial decision to borrow and amount of loan debt the student is willing to accrue in route to earning their bachelor's degree. These types of psychological variables are absent from the NPSAS:08 dataset and thus were not analyzed in this study. Furthermore, as highlighted earlier in this chapter, the NPSAS:08 dataset does not contain variables that specifically addressed Layer 4 (i.e. social, economic, and policy context) of the conceptual model.

Another limitation of this study is related to the self-reported nature of several variables used during data analysis. While most of the variables used in this study were derived from institutional records, several measures relied solely on interviews from students who participated in the NPSAS:08 survey. Self-reported data can lead to statistical bias because students may not be able to accurately recall their past behaviors or experiences, or they may respond to survey items in ways they believe are socially desirable. In this study, the variables used to represent students' social capital (i.e. discussed financial aid with family and/or financial aid counselor) were self-reported. Therefore, these NPSAS:08 measures cannot be interpreted with the same degree of confidence as the other variables in this study that were derived from institutional data and records.

Contributions of this Study

The present study represents a valuable contribution to the extant research literature on college student indebtedness in at least two ways. First, Perna's model of college choice (2006a) provides an innovative framework for examining students' decision to borrow and their cumulative level of indebtedness. Adaptation of Perna's model for the purposes of this study allowed for the examination of many key variables (e.g. high school type, social/cultural capital, institutions' geographic location) that have typically been absent from existing studies of college student indebtedness. The identification of these variables can result in a better understanding of the factors associated with undergraduates' loan borrowing behavior and debt burden.

Second, this study utilized the most recent nationally representative data to identify the characteristics of students who acquired the highest levels of loan debt in route to earning their bachelor's degree. Equipped a better understanding of the student borrowers at the greatest risk of acquiring excessive loan debt, policymakers and higher education leaders can begin to develop strategies aimed at reducing debt burden among this student population. Effective public policies and institutional practices that limit the number of college graduates with excessive loan debt can help decrease loan default and bankruptcy rates, expand borrowers' life choices after graduation, and increase degree attainment across the country.

CHAPTER 4 DATA ANALYSIS AND RESULTS

The objective of this chapter is to present the results from the data analyses that were conducted to address the two research questions guiding this study. Results from chi-squares, t-tests, and analysis of variance (ANOVAs) are presented in the preliminary data analysis section. The advanced data analysis section presents results from the logistic and linear multivariate regression models. This chapter concludes with a section that highlights findings from the data analyses.

Preliminary Data Analysis

Chi-squares, t-tests, and ANOVAs were performed to determine if the differences between five key independent variables were statistically significant for each of the dependent variables. The five independent variables examined were students' gender, race/ethnicity, dependency status, family income, and postsecondary institution type. The results from these statistical tests are presented in the follow two subsections. Each subsection specifically address one of the two dependent variables used in this study.

Dependent Variable One: The Probability of Borrowing through Student Loans

Chi-square is a nonparametric statistical procedure that is used to test hypotheses about whether two or more categorical variables are independent of one another (Myers & Well, 2003). Since the five independent variables and the dependent variable used in these preliminary analyses were categorical, chi-square tests were used to examine expected outcomes (i.e. the probability of borrowing) across each level of the independent measures. Results for each of the five chi-square tests are presented in Table 4-1. In addition, Table 4-2 provides frequencies and percentages for this dependent variable across each level of the five independent variables.

Table 4-1. Chi-square tests for the probability of borrowing through student loans

| Independent measure | Pearson chi-square | df | p-value |
|---------------------|--------------------|----|---------|
| Gender | 80.84 | 1 | .000*** |
| Race/ethnicity | 363.69 | 3 | .000*** |
| Dependency status | 328.02 | 2 | .000*** |
| Family income | 1092.24 | 3 | .000*** |
| Institution sector | 532.36 | 2 | .000*** |

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Table 4-2. Frequencies and percentages for the probability of borrowing through student loans

| Independent measure | Frequency | % Did not borrow | % Borrowed |
|----------------------------------|-----------|------------------|------------|
| <i>Gender</i> | | | |
| Male | 11,099 | 37.9 | 62.1 |
| Female | 14,571 | 32.5 | 67.5 |
| <i>Race/ethnicity</i> | | | |
| White | 17,578 | 36.1 | 63.9 |
| Black | 2,590 | 20.0 | 80.0 |
| Latino | 2,737 | 33.8 | 66.2 |
| Asian | 1,873 | 45.9 | 54.1 |
| <i>Dependency status</i> | | | |
| Dependent | 14,978 | 39.3 | 60.7 |
| Independent with dependents | 6,388 | 28.3 | 71.7 |
| Independent without dependents | 4,306 | 28.6 | 71.4 |
| <i>Family income</i> | | | |
| Low income | 6,416 | 25.8 | 74.2 |
| Mid-low income | 6,417 | 27.7 | 72.3 |
| Mid-high income | 6,419 | 34.8 | 65.2 |
| High income | 6,417 | 50.8 | 49.2 |
| <i>Institution sector</i> | | | |
| Public four-year | 15,553 | 38.5 | 61.5 |
| Private not-for-profit four-year | 7,070 | 25.7 | 32.5 |
| Private for-profit four-year | 834 | 4.1 | 95.9 |

The first chi-square analysis examined expected outcomes between male and female 2007-08 bachelor's degree graduates regarding the probability of borrowing through student loans.

The results indicated that female students were significantly more likely than males to borrow through student loans ($p \leq .001$). Furthermore, 68% of females borrowed through student loans in route to earning their bachelor's degree compared to 62% of male students.

The second chi-square analysis examined expected outcomes between students' race/ethnicity and the probability of borrowing. Among 2007-08 bachelor's degree graduates, Black students (80%) were most likely to borrow through students, followed by Latinos (66%),

Whites (64%), and Asians (54%). The chi-square results for this test were statistically significant ($p \leq .001$), which indicated that differences in borrowing between two or more of the racial/ethnicity groups were not due to chance.

Next, a chi-square analysis was performed to examine the probability of borrowing by students' dependency status. The results of this test were statistically significant ($p \leq .001$). In addition, independent students without dependents (72%) and independent students with dependents (71%) were considerably more likely to borrow through student loans than dependent students (61%).

A chi-square analysis was performed to examine 2007-08 bachelor's degree graduates probability of borrowing through student loans as a function of family income. The results were statistically significant ($p \leq .001$) and comparison of percentages for the four income classifications indicated that the probability of borrowing through student loans decreases as family income increases. Approximately 74% of graduates from low-income families borrowed as compared to 49% of graduates from high-income families.

The final chi-square analysis examined expected outcomes by postsecondary institution type. The results of this test were statistically significant ($p \leq .001$). The probability of borrowing through student loans was highest for students attending private for-profit institutions (96%), followed by private not-for-profits (71%) and public four-years (62%).

Dependent Variable Two: Levels of Student Loan Debt among Borrowers

An independent samples t-test was used to examine cumulative levels of student loan debt by gender among 2007-08 bachelor's degree graduates who borrowed. The results from this statistical test are presented in Table 4-3 and indicate that female students are more likely to acquire higher levels of loan debt than male students ($p \leq .001$). The average level of loan debt for females was \$23,878 and males had an average debt level of \$22,340. The mean difference

indicates that on average female 2007-08 bachelor's degree graduates who borrowed through student loans accrued \$1,538 more in loan debt than their male counterparts.

Table 4-3. t-test of mean cumulative level of student loan debt (n=16,333)

| | df | t | Mean difference | Std. Error difference | p value |
|-------------------|-------|--------|-----------------|-----------------------|---------|
| Males vs. females | 16331 | -5.793 | -1538.22 | 265.53 | .000*** |

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

A one-way ANOVA was used to examine if there were statistically significant mean differences between students' race/ethnicity (i.e. White, Black, Latino, Asian) and their cumulative level of student loan debt. In particular, this analysis involved a multiple comparisons test using orthogonal contrasts with Scheffe's post hoc analysis. The results of the ANOVA (see Table 4-4) indicate there are significant differences in loan debt levels by race/ethnicity ($p \leq .001$).

Table 4-4. ANOVA for level of student loan debt by students' race/ethnicity (n=15,730)

| | | Sum of squares | df | Mean square | F | p value |
|----------------------------|----------------|----------------|-------|-------------|--------|---------|
| Level of student loan debt | Between groups | 4.742 | 3 | 1.581 | 57.404 | .000*** |
| | Within groups | 4.330 | 15725 | 2.754 | | |
| | Total | 4.378 | 15728 | | | |

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

With regards to the post hoc comparisons between each racial/ethnic group (see Table 4-5), the mean differences in loan debt levels were significant at the $p \leq .001$ level for all groups, except for the comparison between Latino and Asian students. Among 2007-08 bachelor's degree graduates who borrowed, Black students had the highest average level of student loan debt (\$26,438) and Asian students had the lowest average level of debt (\$19,486).

Table 4-5. Scheffe's post hoc tests of mean differences for levels of student loan debt by students' race/ethnicity (n=15,730)

| (I) Race/ethnicity (group mean) | (J) Race/ethnicity | Mean difference (I-J) | Std. error |
|------------------------------------|--------------------|-----------------------|------------|
| White (23,384.18) | Black | -3,054.23*** | 399.18 |
| | Latino | 2,805.15*** | 425.99 |
| | Asian | 3,898.18*** | 554.86 |
| Black (26,438.41) | White | 3,054.23*** | 399.18 |
| | Latino | 5,859.39*** | 538.96 |
| | Asian | 6,952.42*** | 645.66 |
| Latino (20,579.02) | White | -2,805.15*** | 425.99 |
| | Black | -5,859.39*** | 538.96 |
| | Asian | 1,093.03 | 662.57 |
| Asian (19,485.99) | White | -3,898.18*** | 554.86 |
| | Black | -6,952.42*** | 645.66 |
| | Latino | -1,093.03 | 662.57 |

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

The results of the one-way ANOVA that examined differences in student loan debt levels by students' dependency status (i.e. dependent, independent without dependents, independent with dependents) are presented in Table 4-6. The overall model indicates there are statistically significant mean differences according to students' dependency status ($p \leq .001$).

Table 4-6. ANOVA for level of student loan debt by students' dependency status (n=16,333)

| | | Sum of squares | df | Mean square | F | p value |
|----------------------------|----------------|----------------|-------|-------------|---------|---------|
| Level of student loan debt | Between groups | 7.512 | 2 | 3.756 | 136.461 | .000*** |
| | Within groups | 4.494 | 16329 | 2.752 | | |
| | Total | 4.570 | 16331 | | | |

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Post hoc comparisons reveal that independent students, both without and with dependents, have higher levels of student loan debt on average than dependent students (see Table 4-7). The mean difference between independent students without dependents and independent students with dependents was not significant. Overall, dependent students had an average student loan debt of \$20,945, while the average debt levels among independent students without dependents (\$25,327) and with dependents (\$25,953) were significantly higher.

Table 4-7. Scheffe's post hoc tests of mean differences for levels of student loan debt by students' dependency status (n=16,333)

| (I) Dependency status (group mean) | (J) Dependency status | Mean difference (I-J) | Std. error |
|--|--------------------------------|-----------------------|------------|
| Dependent (21,292.02) | Independent with dependents | -4,034.49*** | 304.77 |
| | Independent without dependents | -4,660.83*** | 350.67 |
| Independent without dependents (25,326.51) | Dependent | 4,034.49*** | 392.42 |
| | Independent with dependents | -626.34 | 305.24 |
| Independent with dependents (25,952.85) | Dependent | 4,660.83*** | 346.08 |
| | Independent without dependents | 626.34 | 387.55 |

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Next, a one-way ANOVA was conducted to determine if between group differences existed by students' family income status (i.e. low, mid-low, mid-high, high) with regards to their cumulative level of student loan debt. The results of this ANOVA are presented in Table 4-8 and the overall model indicates there are significant mean differences by family income ($p \leq .001$).

Table 4-8. ANOVA for level of student loan debt by students' family income status (n=16,333)

| | | Sum of squares | df | Mean square | F | p value |
|----------------------------|----------------|----------------|-------|-------------|--------|---------|
| Level of student loan debt | Between groups | 1.284 | 3 | 4.281 | 15.338 | .000*** |
| | Within groups | 4.557 | 16328 | 2.791 | | |
| | Total | 4.570 | 16331 | | | |

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Mean differences between each of the four income classifications show that on average the cumulative level of student loan debt increases as family income decreases (see Table 4-9). The post hoc comparisons reveal that students in the highest income quartile had significantly lower levels of debt when compared to students belonging to the low income ($p \leq .001$), mid-low income ($p \leq .001$), and mid-high ($p \leq .01$) quartiles. In addition, students in the low income quartile had higher average levels of loan debt than students in the mid-high quartile.

Table 4-9. Scheffe's post hoc tests of mean differences for levels of student loan debt by students' family income status (n=16,333)

| (I) Family income status (group mean) | (J) Family income status | Mean difference (I-J) | Std. error |
|--|--------------------------|-----------------------|------------|
| Lowest Quartile (24,162.16) | Mid-Low Quartile | 604.50 | 348.06 |
| | Mid-High Quartile | 1,084.43* | 358.68 |
| | Highest Quartile | 2,569.28*** | 388.52 |
| Mid-Low Quartile (23,557.67) | Lowest Quartile | -604.50 | 348.06 |
| | Mid-High Quartile | 479.93 | 360.78 |
| | Highest Quartile | 1,964.78*** | 390.46 |
| Mid-High Quartile (23,077.73) | Lowest Quartile | -1,084.43* | 358.68 |
| | Mid-Low Quartile | -479.93 | 360.78 |
| | Highest Quartile | 1,484.85** | 399.96 |
| Highest Quartile (21,592.89) | Lowest Quartile | -2,569.27*** | 388.52 |
| | Mid-Low Quartile | -1,964.78*** | 390.46 |
| | Mid-High Quartile | -1,484.85** | 399.96 |

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

The final one-way ANOVA examined differences in cumulative levels of student loan debt by the type of postsecondary institution (i.e. public four-year, private non-profit four-year, private for-profit four-year) students' attended during the 2007-08 academic year. The results of the overall model ($p \leq .001$; see Table 4-10) indicate significant mean differences by institutional type.

Table 4-10. ANOVA for level of student loan debt by type of postsecondary institution (n=14,988)

| | | Sum of squares | df | Mean square | F | p value |
|----------------------------|----------------|----------------|-------|-------------|---------|---------|
| Level of student loan debt | Between groups | 2.366 | 2 | 1.183 | 443.545 | .000*** |
| | Within groups | 3.996 | 14985 | 2.667 | | |
| | Total | 4.233 | | | | |

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Furthermore, all three between group post hoc comparisons were statistically significant ($p \leq .001$; see Table 4-11). The average cumulative level of student loan debt was significantly different between public four year (\$20,442), private non-profit four-year (\$27,441), and private for-profit four-year (\$33,121) institutions.

Table 4-11. Scheffe's post hoc tests of mean differences for levels of student loan debt by type of postsecondary institution (n=14,988)

| (I) Institution type (group mean) | (J) Institution type | Mean difference (I-J) | Std. error |
|--|------------------------------|-----------------------|------------|
| Public four-year (20,442.31) | Private non-profit four-year | -6998.32*** | 288.20 |
| | Private for-profit four-year | -12678.72*** | 603.13 |
| Private non-profit four- year (27,440.63) | Public four-year | 6998.32*** | 624.01 |
| | Private for-profit four-year | -5680.40*** | 315.75 |
| Private for-profit four- year (33,121.03) | Public four-year | 12678.72*** | 571.52 |
| | Private non-profit four-year | 5680.40*** | 617.38 |

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Examination of the results from the preliminary data analysis suggest there are differences in loan borrowing as a function of students' gender, race/ethnicity, dependency status, income status, and postsecondary institution type. Statistically significant findings from the chi-squares, t-tests, and ANOVAs provided the rationale for conducting for more sophisticated statistical procedures. These statistical procedures are discussed in the subsequent section.

Advanced Data Analysis

This section will present results from the advanced data analysis used to address the two research questions guiding this study. First, a binary logistic multivariate regression model was conducted to examine students' likelihood of borrowing through student loans. Next, a linear multivariate regression model was used to examine the level of student loan indebtedness among the 2007-08 bachelor's degree graduates who did borrow. The results of each regression model are discussed separately in the following subsections.

Logistic Multivariate Regression: The Probability of Borrowing through Student Loans

A logistic multivariate regression was used to address the first research question guiding this study. The dependent variable of interest for this question was whether or not the student had ever borrowed through any type of student loan (i.e. federal, private, state, institutional) in route to earning his/her bachelor's degree. The overall model was significant ($p \leq .001$) and predicted the decision to borrow through student loans correctly for 71% of the students (see Table 4-12).

The results from the logistic regression model will be discussed in terms of the final block, which controlled for all independent variables used in this study (see Table 4-13). Coefficients are discussed in terms of the expected β , which were converted into percentages (using the exponential function) for ease of interpretation.

Table 4-12. Binary logistic multivariate regression model measures for the probability of borrowing through student loans (n=25,671)

| | Chi-square | df | Sig. | Nagelkerke R Square | % predicted correctly |
|--------------------------|------------|----|---------|---------------------|-----------------------|
| Probability of borrowing | 4644.320 | 47 | .000*** | .225 | 70.8% |

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Table 4-13. Results for binary logistic multivariate regression model for the probability of borrowing through student loans

| Variable name (reference group) | Beta | Exp(B) | Std. Error | Wald |
|---|----------|--------|------------|---------|
| <i>Demographic Characteristics</i> | | | | |
| Female (male) | .143** | 1.154 | .050 | 8.116 |
| Black (White) | .490*** | 1.632 | .096 | 25.862 |
| Latino (White) | .016 | 1.016 | .094 | .030 |
| Asian (White) | .032 | 1.033 | .102 | .100 |
| Independent without dependents (dependent) | .216** | 1.241 | .084 | 6.638 |
| Independent with dependents (dependent) | .115 | 1.122 | .086 | 1.802 |
| <i>Social and Cultural Capital</i> | | | | |
| Parent's education less than bachelor's degree (advanced degree) | .370*** | 1.448 | .057 | 42.795 |
| Parent's education bachelor's degree (advanced degree) | .206*** | 1.229 | .061 | 11.534 |
| English as primary language (yes) | -.461*** | .631 | .094 | 24.179 |
| Discussed financial aid with parents (yes) | -.462*** | .630 | .055 | 71.007 |
| Discussed financial aid with financial aid counselor or staff (yes) | -.744*** | .475 | .049 | 234.301 |
| <i>Demand for Higher Education</i> | | | | |
| ACT score 18 or less (26 or higher) | .331*** | 1.392 | .085 | 14.996 |
| ACT score 19 to 25 (26 or higher) | .288*** | 1.334 | .062 | 21.678 |
| College GPA less than 3.0 (3.0 or higher) | .183*** | 1.200 | .051 | 12.740 |
| <i>Supply of Resources</i> | | | | |
| Low family income (high income) | .467*** | 1.595 | .101 | 21.376 |
| Mid-low family income (high income) | .419*** | 1.521 | .082 | 26.241 |
| Mid-high family income (high income) | .337*** | 1.400 | .074 | 20.794 |
| Low unmet need after grants (no need) | .632*** | 1.882 | .075 | 71.618 |
| Mid-low unmet need after grants (no need) | .650*** | 1.916 | .080 | 66.438 |

Table 4-13. Continued

| | | | | |
|---|-----------|--------|------|---------|
| Mid-high unmet need after grants (no need) | .824*** | 2.279 | .078 | 111.780 |
| High unmet need after grants (no need) | .437*** | 1.548 | .090 | 23.321 |
| <i>Expected Benefits</i> | | | | |
| Humanities (business/management) | .042 | 1.042 | .079 | .277 |
| Social/behavioral science (business/management) | .105 | 1.110 | .081 | 1.661 |
| Life/Physical Science (business/management) | .127 | 1.135 | .105 | 1.475 |
| Math/Computer Science/Engineering (business/management) | -.002 | .998 | .089 | .001 |
| Education (business/management) | .028 | 1.028 | .092 | .091 |
| Health (business/management) | .111 | 1.117 | .100 | 1.217 |
| Vocational/Technical/Professional (business/management) | .100 | 1.105 | .088 | 1.290 |
| Expected to earn bachelor's or less (advanced degree) | -.150* | .861 | .069 | 4.722 |
| Expected to earn master's degree (advanced degree) | -.010 | .990 | .063 | .024 |
| <i>Expected Costs</i> | | | | |
| Attended private non-for-profit institution (public four-year) | .399*** | 1.490 | .078 | 25.794 |
| Attended private for-profit institution (public four-year) | 2.374*** | 10.736 | .250 | 90.221 |
| <i>Institutional Characteristics</i> | | | | |
| Attended a private high school (public) | -.269*** | .764 | .064 | 17.521 |
| Attended a foreign high school (public) | -1.218*** | .296 | .134 | 82.257 |
| Institution location suburb (city) | .080 | 1.084 | .076 | 1.109 |
| Institution location town (city) | .222** | 1.248 | .081 | 7.518 |
| Institution location rural (city) | .097 | 1.101 | .171 | .320 |
| Institution region Great Lakes/Plains (New England/Mideast) | .309*** | 1.362 | .088 | 12.398 |
| Institution region Southeast (New England/Mideast) | -.095 | .910 | .088 | 1.152 |
| Institution region Southwest (New England/Mideast) | -.207 | .813 | .128 | 2.620 |
| Institution region Rocky Mountains/Far West (New England/Mideast) | -.337*** | .714 | .101 | 11.018 |

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

The first block of variables examined the probability that students would borrow through student loans as a function of the following demographic characteristics: gender, race/ethnicity, and dependency status. Controlling for all other variables, female students were 15% more likely ($\beta = .143$, $p \leq .01$) to borrow through student loans than male students. There were no statistically significant differences in the probability of borrow for Latino and Asian students when compared to White students. However, Black students were 63% more likely ($\beta = .490$, $p \leq .001$) than White students to have borrowed through student loans in route to earning their bachelor's

degree. With regards to students' dependency status, independent students without dependents were 24% more likely ($\beta = .216, p \leq .01$) to borrow than dependent students.

The second block of variables examined students' social and cultural capital. In this study, social capital was measured by two variables that indicated whether the student discussed their financial aid options with their parents, and/or with a financial aid counselor. Controlling for all other variables, the results indicated that students who discussed financial aid with their parents ($\beta = -.462, p \leq .001$) and with financial aid counselors ($\beta = -.744, p \leq .001$) were significantly less likely to borrow through student loans.

Cultural capital was measured in this study by the level of education attained by the students' parents and by the students' primary spoken language. Compared to students whose parents had a master's degree or higher, students whose parents had a bachelor's degree were 23% more likely to borrow ($\beta = .206, p \leq .001$). Moreover, students whose parents had earned less than a bachelor's degree were 45% more likely ($\beta = .370, p \leq .001$) to borrow through loans than students whose parents had advanced degrees. Students for whom English was not the primary language spoken at home were 36% less likely ($\beta = -.461, p \leq .001$) to borrow than students who were native English speakers.

The third block of variables gave attention to students demand for higher education as measured by their academic achievement. Scores on college entrance exams (i.e. an ACT/SAT derived score) and college grade point average were used to measure students' academic achievement in this study. Compared to students whose test scores were in the top quartile (i.e. 26 or above), students scoring between 19 and 25 were 33% more likely to borrow ($\beta = .288, p \leq .001$) and students scoring 18 or lower were 39% more likely ($\beta = .331, p \leq .001$) to borrow through student loans. In addition, college GPA was also significantly associated with the

probability of borrowing. Students whose GPA was less than 3.0 were 20% more likely ($\beta = .183$, $p \leq .001$) to borrow than students with a 3.0 GPA or higher.

The next block of variables entered into the regression model examined students' supply of financial resources. Compared to students in the highest family income quartile (i.e. \$93,644 or higher), students belonging to the three other income quartiles (i.e. low, mid-low, mid-high) were significantly more likely to borrowing through student loans. The lower the students' level of family income the more likely he/she was to borrow, and students from the lowest income quartile (i.e. \$18,788 or less) were 60% more likely ($\beta = .331$, $p \leq .001$) to borrow than high-income students. Students' level of remaining unmet financial need after all grant aid was also used a measure of his/her supply of financial resources. In comparison to students with no remaining unmet need, students with any amount of unmet need (i.e. low, mid-low, mid-high, high) were significantly more likely to borrow through student loans. Students in the category of mid-high unmet need (i.e. \$6,894 to \$12,862) had the greatest probability of borrowing and were 127% more likely ($\beta = .824$, $p \leq .001$) to borrow than students with no unmet need.

The fifth block of variables examined students' assessment of the expected benefits of borrowing to achieve their academic goals. These variables included students' academic major and the highest level of education expected. Compared to business/management majors, none of the other seven classifications of academic majors yielded statistically significant results regarding the probability of borrowing. In terms of educational expectations, students that expected to earn a bachelor's degree or less were 14% less likely ($\beta = -.150$, $p \leq .05$) to borrow than students who expected to earn their doctorate or first-professional degree. The likelihood of borrowing was not significantly different for students who expected to earn a master's degree as compared to those who expected to earn their doctorate or first-professional.

The sixth block examined students' assessment of the expected costs associated with borrowing. The type of postsecondary institution students attended strongly influenced their probability of borrowing through student loans. Students at private not-for-profit institutions were 50% more likely ($\beta = .399, p \leq .001$) to borrow than students attending public four-year institutions. Furthermore, students attending private for-profit institutions were 974% more likely ($\beta = 2.374, p \leq .001$) to borrow than students attending public four-year institutions.

The seventh and final block of variables entered into the regression model examined characteristics of students' high schools and postsecondary institutions. The variables included in this block were high school type, postsecondary institution degree of urbanization, and postsecondary institution geographic region of the United States. Compared to students who attended public high schools, students who attended private high schools were 24% less likely ($\beta = -.269, p \leq .001$) to borrow and students who attended foreign high schools were 70% less likely ($\beta = -1.218, p \leq .001$) to borrow through student loans. Compared to students who attended postsecondary institutions located in cities, students who attended institutions located in towns were 25% more likely ($\beta = .222, p \leq .01$) to borrow through student loans. In addition, results indicated several statistically significant results with regards to borrowing across different geographic regions of the United States. Compared to students attending postsecondary institutions located in the New England/Mideast region, students in the Great Lakes/Plains region were 36% more likely ($\beta = .309, p \leq .001$) to borrow and students in the and Rocky Mountains/Far West region were 30% less likely ($\beta = -.337, p \leq .001$) to borrow through student loans.

Linear Multivariate Regression: Levels of Student Loan Debt among Borrowers

Linear multivariate regression was used to address the second research question guiding this study. The dependent variable of interest was the cumulative level of student loan debt

among 2007-08 bachelor's degree graduates who borrowed. The regression model used in this study explained 12% of the total variance in the level of student loan indebtedness ($df= 16,292$; $F= 53.32$; $p \leq .001$) and six of the seven block entries resulted in a significant change in the model (see Table 4-14). The results from the overall regression model will be discussed in terms of the final block, which controls for all independent variables used in this study. The unstandardized beta coefficients are reported and discussed since they represent dollar amount differences in loan debt levels among student borrowers.

The first category of variables entered into the model examined three demographic characteristics: students' gender, race/ethnicity, and dependency status. Controlling for all other variables, female students were significantly more likely ($\beta= 835.43$, $p \leq .05$) than male students to have higher levels of student loan debt. Students' race/ethnicity was also statistically significant throughout all seven blocks. Black students were more likely ($\beta= 1856.80$, $p \leq .01$) than White students to have higher levels of student loan debt and on average had the highest level of loan debt among all racial/ethnic groups examined in this study. Compared to White students, both Latino ($\beta= -3232.65$, $p \leq .001$) and Asian ($\beta= -2271.39$, $p \leq .05$) students who borrowed were more likely to have lower levels of student loan debt. Asian students had the lowest average loan debt level compared to all racial/ethnic groups. With regards to students' dependency status, independent students without ($\beta= 5547.19$, $p \leq .001$) and with dependents ($\beta= 3537.29$, $p \leq .001$) had higher levels of student loan debt than students who were still dependents.

The second block of variables examined students' social and cultural capital. Social capital was measured in this study by two variables that indicated whether the student discussed financial aid with his/her family, and with a financial aid counselor. Mean differences in loan debt levels were not statistically significant based upon whether students' discussed financial aid

Table 4-14. Unstandardized beta coefficients for blocked entry regression on the cumulative level of student loan debt (n=16,333)

| Variable name (reference group) | Block 1 | Block 2 | Block 3 | Block 4 | Block 5 | Block 6 | Block 7 |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Intercept | 20,799.63*** | 20,849.84*** | 20,774.54*** | 18,234.61*** | 18,374.08*** | 15,668.40*** | 18,114.16*** |
| <i>Demographic Characteristics</i> | | | | | | | |
| Female (male) | 1,436.29*** | 1,259.12** | 1,225.18** | 1,362.67*** | 1,099.05** | 901.43* | 835.43* |
| Black (White) | 2,176.71*** | 1,816.83** | 1,654.95** | 1,660.28* | 1,724.14* | 1,643.42* | 1,856.80** |
| Latino (White) | -3,344.12*** | -3,002.66*** | -3,076.86*** | -2,847.51*** | -2,832.78*** | -3,119.61*** | -3,232.65*** |
| Asian (White) | -3,761.69** | -2,795.09* | -2,774.30* | -3,000.27** | -2,892.33** | -2,701.36** | -2,271.39* |
| Independent w/ no dep (dependent) | 4,168.66*** | 3,768.90*** | 3,570.19*** | 5,722.44*** | 5,709.50*** | 5,247.85*** | 5,547.19*** |
| Independent with dep (dependent) | 4,250.64*** | 3,589.11*** | 3,257.64*** | 3,775.16*** | 3,804.24*** | 3,131.30*** | 3,537.29*** |
| <i>Social and Cultural Capital</i> | | | | | | | |
| Parent's ed < bachelor's (advanced) | | 1,190.83*** | 1,935.15*** | 2,031.22*** | 2,055.55*** | 2,177.53*** | 2,037.40*** |
| Parent's ed = bachelor's (advanced) | | 753.70 | 740.23 | 700.98 | 737.82 | 1021.31 | 968.42 |
| English as primary language (yes) | | -2,067.18** | -2,130.70** | -2,128.10** | -2,088.28** | -1,993.81** | -1,614.15* |
| Discussed Fin Aid with parents (yes) | | 604.22 | 543.14 | 594.83 | 649.41 | 409.25 | 399.61 |
| Discussed Fin Aid with financial aid counselor or staff (yes) | | -1,929.29*** | -1,913.32*** | -1,542.83*** | -1,529.73*** | -1,047.02* | -1,194.61** |
| <i>Demand for Higher Education</i> | | | | | | | |
| ACT score 18 or less (26 or higher) | | | 687.51 | 1,041.33 | 1,044.53 | 1,012.75 | 1,348.94* |
| ACT score 19 to 25 (26 or higher) | | | 47.51 | 620.92 | 610.67 | 974.99 | 1,141.96* |
| College GPA < 3.0 (3.0 or higher) | | | 8.74 | 485.57 | 595.51 | 1,162.41* | 1,113.23* |
| <i>Supply of Resources</i> | | | | | | | |
| Low income (high income) | | | | -6,522.86*** | -6,601.01*** | -4,363.70*** | -4,098.89*** |
| Mid-low income (high income) | | | | -4,768.68*** | -4,789.39*** | -3,311.31*** | -3,084.80*** |
| Mid-high income (high income) | | | | -2,158.39*** | -2,177.75*** | -1,264.34* | -1,072.45 |
| Low unmet need (no need) | | | | 2,189.60*** | 2,190.62*** | 1,296.40* | 1,271.34* |
| Mid-low unmet need (no need) | | | | 3,324.25*** | 3,290.59*** | 2,357.75*** | 2,246.05*** |
| Mid-high unmet need (no need) | | | | 6,424.31*** | 6,371.49*** | 4,902.57*** | 4,715.16*** |
| High unmet need (no need) | | | | 11,430.88*** | 11,392.63*** | 7,875.81*** | 7,537.53*** |
| <i>Expected Benefits</i> | | | | | | | |
| Humanities (business/management) | | | | | 930.14 | 1,408.22 | 1,323.44 |

Table 4-14. Continued

| | | | | | | | | |
|--|--|----------|----------|----------|----------|----------|-------------|--------------|
| Social/behavioral science (business/management) | | | | | | 523.34 | 1,418.99 | 1,427.40* |
| Life/Physical Science (business/management) | | | | | | 43.83 | 871.37 | 892.04 |
| Math/Computer Science/Engineering (business/management) | | | | | | -447.26 | 221.96 | 242.74 |
| Education (business/management) | | | | | | 1,306.97 | 2,334.63** | 2,061.34** |
| Health (business/management) | | | | | | 1,309.28 | 2,078.05* | 1,888.28* |
| Vocational/Technical/Professional (business/management) | | | | | | 92.94 | 854.58 | 664.34 |
| Expected to earn bachelor's or less (advanced degree) | | | | | | -346.47 | -558.20 | -580.63 |
| Expected to earn master's (advanced degree) | | | | | | -632.49 | -599.39 | -623.63 |
| <i>Expected Costs</i> | | | | | | | | |
| Private not-for-profit (public four-year) | | | | | | | 5,259.08*** | 4,871.42*** |
| Private for-profit (public four-year) | | | | | | | 7,858.95*** | 7,626.18*** |
| <i>Institutional Characteristics</i> | | | | | | | | |
| Private high school (public) | | | | | | | | -327.57 |
| Foreign high school (public) | | | | | | | | -4,091.58** |
| Institution location suburb (city) | | | | | | | | -806.26 |
| Institution location town (city) | | | | | | | | -740.14 |
| Institution location rural (city) | | | | | | | | -2,834.44* |
| Great Lakes/Plains (New England/Mideast) | | | | | | | | -1,128.43* |
| Southeast (New England/Mideast) | | | | | | | | -3,298.78*** |
| Southwest (New England/Mid East) | | | | | | | | -1,264.06 |
| Rocky Mtns/Far West (New England/Mid East) | | | | | | | | -4,122.02*** |
| <i>R</i> ² | | .027 | .035 | .035 | .085 | .087 | .106 | .116 |
| Change in <i>R</i> ² | | .027*** | .007*** | .000 | .051*** | .001** | .020*** | .010*** |
| <i>F</i> | | 86.21*** | 56.10*** | 43.63*** | 74.68*** | 52.71*** | 62.24*** | 53.32*** |

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

options with their family. However, students who talked with a financial aid counselor were more likely ($\beta = -1194.60$, $p \leq .01$) to have lower levels of student loan debt, on average, than students who did not consult with a counselor.

In this study, cultural capital was measured by the parents' level of education and whether the students' primary language was English. Compared to students whose parents' had advanced degrees (i.e. master's or above), students had significantly higher levels of debt if their parents had earned a less than a bachelor's degree ($\beta = 2037.40$, $p \leq .001$). In addition, students for whom English was not the primary language had lower average levels of student loan debt than native English speakers ($\beta = -1614.15$, $p \leq .05$).

The third block of variables examined students' demand for higher education, as indicated by their academic performance and achievement. Students' standardized college entrance exam test scores (i.e. ACT/SAT derived composite scale) and college grade point averages were used as one measure of academic achievement. Compared to students who scored highly on the ACT (i.e. 26 or above), students who scored 18 or less ($\beta = 1348.94$, $p \leq .05$) or 19 to 25 ($\beta = 1141.96$, $p \leq .05$) on the test were likely to have higher levels of student loan debt. Regarding students' college GPA, students who had less than 3.0 were more likely ($\beta = 1113.23$, $p \leq .001$) to have higher levels of loan debt than students who had earned a 3.0 GPA or higher.

The fourth block examined variables related to students' available supply of financial resources. Net all independent variables, as the level of family income decreased so too did students' level of student loan debt. In comparison to students in the highest quartile of family income, the lower average loan debt levels of students from the low ($\beta = -4098.89$, $p \leq .001$) and mid-low ($\beta = 2246.05$, $p \leq .001$) quartiles were statistically significant. Students' level of remaining unmet financial need after receiving all grant aid was used as a second measure of an

individual's supply of financial resources. Statistically significant results indicated that students' with greater levels of unmet need had higher levels of student loan debt than students with no unmet need. Furthermore, the average amount of loan debt a student owed increased as the level of unmet need increased.

The fifth block entered in the regression model addressed factors associated with students' assessment of the benefits of borrowing through student loans. These variables included students' academic major and the highest level of education ever expected. When compared to business/management majors, students earning degrees in the following areas were more likely to have higher levels of student loan debt: social/behavioral science ($\beta = 1427.40$, $p \leq .05$), education ($\beta = 2061.34$, $p \leq .01$), and health ($\beta = 1888.28$, $p \leq .05$). Results indicated there were no statistically significant differences in loan debt levels as a function of students' highest level of education expected.

The sixth block of variables added to the regression model examined students' assessment of the costs of borrowing through loans. With regards to postsecondary institution type, students who attended private institutions not-for-profit ($\beta = 4871.42$, $p \leq .001$) and private for-profit ($\beta = 7626.18$, $p \leq .001$) had higher levels of loan debt than students who attended public four-year institutions. Students attending private for-profit institutions had the highest average of student loan debt after controlling for all other independent variables.

The seventh and final block examined the following institutional characteristics: high school type, postsecondary institution degree of urbanization, and postsecondary institution geographic region of the United States. Students who attended a foreign high school had lower average levels of loan debt ($\beta = -4091.58$, $p \leq .01$) than students who attended public high schools. The differences in debt levels between students who attended public and private high schools

were not significant. Compared with students attending postsecondary institutions located in cities, students attending institutions in rural areas ($\beta = -2834.44$, $p \leq .05$) had lower levels of student loan debt. In addition, students attending postsecondary institutions in the Great Lakes/Plains ($\beta = -1128.43$, $p \leq .05$), Southeast ($\beta = -3298.78$, $p \leq .001$), and Rocky Mountains/Far West ($\beta = -4122.02$, $p \leq .001$) regions of the United States had lower levels of loan debt on average compared to students attending institutions in the New England/Mideast region.

Summary of Results

This chapter presented results from the preliminary and advanced statistical analyses used to address the two research questions guiding this study. Preliminary data analysis included chi-squares, t-tests, and ANOVAs of the two dependent variables as a function of five independent variables. Statistically significant results suggested that the probability of borrowing through student loans and the total level of loan debt among borrowers differed as a function of students' gender, race/ethnicity, dependency status, family income, and type of postsecondary institution attended. Overall, results from the preliminary data analysis suggest that females, Blacks, independent students, students with greater unmet financial need, and students attending private institutions more likely to borrow and have higher levels of student loan debt. These findings provided the rationale for conducting more advanced statistical procedures.

The results from one logistic multivariate regression model and one linear multivariate regression model were presented in the advanced data analysis section. Overall interpretation of the regression results suggests that students' demographic characteristics, social and cultural capital, supply of financial resources, and postsecondary institution type were strongly associated with students' probability of borrowing and cumulative level of student loan debt. In addition, findings from this study suggest that Perna's (2006a) proposed conceptual model can serve as useful framework for examining student loan borrowing and indebtedness. The follow chapter

will discuss the statistical findings from this study in greater detail and in relation to the existing research literature.

CHAPTER 5 DISCUSSION

The purpose of this chapter is to discuss and give context to the statistical results presented in Chapter 4. First, the purpose statement and research questions guiding this study are revisited. Next, the findings from the previous chapter are discussed in relation to the existing research literature and policy reports on student loan borrowing and indebtedness. Findings are organized and discussed based upon the major constructs described in the conceptual model guiding this study. The final section provides a summary of the highlights presented throughout the chapter.

Purpose of the Study Revisited

Numerous research studies and policy reports have indicated that more college students are borrowing more money than ever before through education loans in order to pay for college (see Boushey, 2005; King, 2005; King & Bannon, 2002; Steele & Baum, 2009). In 2008, the average level of loan debt among all bachelor's degree graduates who borrowed was \$23,242 and approximately 15% of these graduates had accumulated \$40,000 more in loan debt (NPSAS, 2008). The dramatic spike in student loan borrowing and debt burden has drawn widespread attention in the media and within the public policy arena (Gladieux & Perna, 2005). Furthermore, rising tuition rates and declining financial support for postsecondary education from federal and state governments have the potential to exacerbate the student debt problem (Carey & Dillon, 2009). Collectively, these factors corroborate the need for timely research on student loan borrowing among America's college students.

The purpose of this study was to examine the probability of borrowing through student loans and the cumulative level of student loan debt among America's 2007-08 bachelor's degree graduates. The latest national dataset related to students' use of education loans (i.e. NPSAS:08) was used to address the two research questions guiding this study:

1. What individual, familial, and institutional factors are associated with 2007-08 bachelor's degree graduates' probability of borrowing through student loans?
2. What individual, familial, and institutional factors are associated with the total level of student loan debt among 2007-08 bachelor's degree graduates who borrowed?

Descriptive and multivariate analysis of the NPSAS:08 data allowed for the identification of individual, familial, and institutional characteristics that are associated with students' decision to borrowing through student loans and the cumulative level of loan indebtedness among student borrowers. The major findings from this empirical study are discussed more systematically in the following section.

Discussion of Results

In the following subsections, the findings from the data analyses will be discussed in relation to the existing research literature on student loan borrowing and indebtedness. The discussion is organized and presented based upon the major constructs described in the adapted version of Perna's (2006a) model used as a conceptual framework to guide this study. These constructs include demographic characteristics, social and cultural capital, demand for higher education, supply of financial resources, expected benefits and costs of borrowing, and institutional characteristics.

In addition to integrating aspects of the economic theory human capital, Perna's model gives attention to key sociological factors that may influence student loan borrowing behavior. The model also recognizes that student decision making occurs within a situated context, and may be influenced by exogenous variables like institutional characteristics and public policy (2006a). Overall, Perna's model served as a powerful framework for situating the results of the present study within the landscape of the extant research literature on student loan borrowing and indebtedness.

Demographic Characteristics

This study examined students' loan borrowing behavior and debt levels as a function of three demographic characteristics: students' gender, race/ethnicity, and dependency status. Female students were more likely than males to borrow through student loans and have higher levels of loan debt, and this finding held across all blocks for both regression models. In the extant research literature, there are mixed findings regarding the role of gender in students' borrowing behavior. In support of findings from this study, several researchers have found that gender was significantly related to student loan borrowing and indebtedness (Kantrowitz, 2009). Conversely, other studies have found no statistically significant differences in the loan borrowing behavior and debt levels of female and male college students (Harrast, 2004).

Existing studies that have examined the relationship between students' gender and student loan borrowing have utilized different research designs, samples, and sources of data. These methodological differences across these studies may explain some the mixed findings in the extant research literature. However, it may also be possible that female and male students have different attitudes and/or perceptions regarding the use of student loans to pay for college. These are potential gender differences that may be worthy of exploration in future studies of student loan borrowing and indebtedness.

With regards to students' race/ethnicity, this study found that Black students were the most likely to borrow and have the highest levels of debt. This confirmed the hypothesis proposed in Chapter 3. This finding is well-aligned with existing studies that suggest Black students are at the greatest risk of experiencing financial hardships as a result borrowing through student loans (King & Bannon, 2002; Price, 2004a). In this study, the greater probability of borrowing and the higher levels of loan debt were evident for Black students after controlling for family income and level of unmet need after all grant aid. These findings suggest that Black college students may be

more willing than other racial/ethnic groups to utilize loans to help them achieve their higher education goals (e.g. earn a bachelor's degree).

Approximately 80% of all Black 2007-08 bachelor's degree graduates borrowed in route to earning their degree. This percentage was significantly higher than any other racial/ethnic group. Viewed in light of Perna's (2006a) conceptual model, this particular finding suggests that many Black students perceive the benefits of borrowing through student loans to outweigh the costs. Discouragingly, Black students also continue to be overrepresented among students with \$40,000 or more in loan debt (Kantrowitz, 2009) and among loan defaulters (Flint, 1997). Since Black students comprised only 10% of all 2007-08 bachelor's degree graduates (NPSAS:08), the high debt burden of this student population may be further exacerbating social inequality in American higher education (Price, 2004a).

A particularly notable finding from this study is related to the borrowing behavior of Latino and Asian students. Several existing studies and reports have suggested these particular racial/ethnic groups may be loan averse and less likely to borrow through student loans than their peers (Cunningham & Santiago, 2008; EMC Foundation, 2003). The loan aversion of Latino and Asian students has been ascribed to held cultural values and generally negative perceptions towards the acquisition of financial debt (Singer & Paulson, 2004). In recent years, however, researchers have highlighted the importance of examining other key variables (e.g. social/cultural capital, family income) before attributing differences in loan borrowing behavior strictly to students' race/ethnicity (Chen, 2008; Dowd, 2008).

Controlling for key sociological and financial variables, this study found that Latino and Asian bachelor's degree graduates were not significantly less likely to borrow through student loans than White students. However, Latino and Asian graduates who borrowed did have

significantly lower levels of student loan debt than their White peers. These findings conflict with the hypotheses proposed in Chapter 3 of this study. While Latino and Asian students borrowed at rates comparable to other racial/ethnic groups, their cultural values and/or perceptions of debt may have influenced the total amount they borrowed through students loans in route to earning their bachelor's degree. Perna's (2006a) model implies that race/ethnicity is just one of numerous factors within the student and family context (i.e. Layer 1) that can influence students' loan borrowing behavior and debt burden.

The lower loan debt levels among Latino and Asian student borrowers in this study may support the notion that cultural and/or familial values impact the borrowing behavior of these student populations (Cunningham & Santiago, 2008; EMC Foundation, 2003). However, there may also be a variety of additional factors (e.g. educational choices, psychological variables) not available in NPSAS:08 that could help explain why these 2007-08 bachelor's degree graduates borrowed less than their peers. These findings, therefore, should be considered in conjunction with existing research literature that addresses the loan borrowing behavior of Latino and Asian college students. In future studies on this topic, qualitative research methods may help provide a better understanding of the more nuanced factors that shape the borrowing decisions of these racial/ethnic groups.

Regarding students' dependency status, this study found that independent students were more likely to borrow and have higher levels of loan debt than dependent students. Similarly, existing studies have found that older students are more likely to have high levels of debt (Harrast, 2004; Kantrowitz, 2009). Dependent students are typically traditional college-aged individuals who still rely on their parents or other family members for financial support to pay for college-related expenses. Conversely, independent students are typically 25 years of age or

older may have additional financial obligations beyond those typically held by dependent students. For example, many independent students have mortgages and children to raise and support. Findings corroborate the importance of examining students' dependency status in future studies of student loan borrowing.

Existing research suggest that students' demographic characteristics can influence many of their college-related decisions, including their decision to attend college (Perna, 2006a). Findings from this study corroborate that demographic variables also play a major role in college students' loan borrowing behavior and level of indebtedness. Importantly, Perna's (2006a) model depicts how demographic characteristics are related to other key constructs that collectively shape many of the choices that students, and their families, make about attending and financing higher education.

Social and Cultural Capital

A primary contribution of Perna's (2006a) conceptual model to the student of college student decision-making and behavior is the inclusion of sociological constructs, such as social and cultural capital. These constructs have been given limited attention in previous studies of student loan borrowing that have primarily relied on human capital theory. Existing literature suggest that students utilize various forms of social capital, such as parents, teachers, counselors and peers, when making college-related decisions (McDonough, 1997; Perna, 2008; Tierney & Venegas, 2006). In this study, two NPSAS:08 variables were used to examine the extent to which 2007-08 bachelor's degree graduates utilized their social capital when making decisions about financial aid for college. These particular measures indicated whether students relied on their parents and/or financial aid counselors when making financial aid decisions.

This study found that 2007-08 bachelor's degree graduates who discussed financial aid options with their parents or family members were significantly less likely to borrow through

student loans. Existing research suggests that parents can play an important role in helping students make decisions about college (McDonough, 1997). In this study, parents of many students may have provided them with assistance in applying for grants or scholarships, and therefore reduced the need for these students to borrow. As Perna's (2006a) model suggests, parents can play an important role in students' college-related decisions, including choices about borrowing through student loans.

Researchers have also found that parents who have limited or negative experiences using credit may influence their child's hesitancy to acquire debt (Joo, Grable, & Bagwell, 2003). Accordingly, many engaged parents in this study may have been hesitant for their child to use student loans and advised their child to explore other alternatives. For example, some parents may have encouraged their child to attend a lower-cost postsecondary institution (e.g. the local community college) where the need to borrow through student loans would not be as substantial.

Controlling for all other variables, in this study discussing financial aid options with a financial aid counselor or staff member was associated with a lower probability of borrowing and lower levels of loan debt among 2007-08 bachelor's degree graduates. These discussions could have occurred before or during the students' enrollment in higher education. Speaking with a counselor may have helped students identify ways to pay for college other than borrowing through student loans. Furthermore, a financial aid counselor(s) could have helped these students complete the required paperwork (i.e. FASFA, scholarship application) to become eligible for grant aid. Some student borrowers may have also utilized advice from financial aid counselors to help limit their overall level of loan debt. Recently, several research studies have drawn attention to the ways in which financial aid counseling influences students' understanding and use of

financial aid (Dowd, 2008; McDonough & Calderone, 2006). Therefore, these particular findings from this study represent an important and timely contribution to the extant research literature.

In this study, a student's cultural capital was measured by their parents' level of education and whether English was their primary spoken language. Existing research suggest that parents' level of education can influence student borrowing (Kantrowitz, 2009; Perna, 2008), and findings from this study support those results. Students whose parents had earned a bachelor's degree or less, compared to parents with advanced degrees (i.e. master's or above), were more likely to borrow and have higher levels of loan debt. Since level of educational attainment is strongly correlated with income (Baum & Ma, 2007), it is probable that many parents with lower levels of education have lower salaries and therefore do not have the financial means to help their children pay for college. As a result, perhaps a growing number of students are using education loans in order to bridge the gap between their family's financial contribution and the cost associated with earning their bachelor's degree.

Students for whom English was not the primary language were less likely to borrow and have lower levels of loan debt than primary English speaking students. A significant number of the 2007-08 bachelor's degree graduates for who English is not the primary language may have been immigrants. Existing research suggest that language barriers and inexperience with existing financial institutions prevents many immigrants from using a variety of financial services (Singer & Paulson, 2004). Therefore, many students for whom English was not the primary language may have made a conscious decision not to borrow, or to borrow as little as possible, because they felt unknowledgeable about America's student loan system and/or were unable to navigate the complex loan process.

A considerable number of existing studies have examined how students' social and cultural capital impacts their decision to enroll in college (Ellwood & Kane, 2000; Perna & Titus, 2005). However, few studies have used these sociological constructs to explain differences in student loan borrowing among college students. Findings from this study highlight the importance of including measures of social and cultural capital in future studies of student loan borrowing and indebtedness. Just as these variables are important in students' decision to attend college (Perna 2006a), access to accurate information and support networks play a key role in students' assessment of the costs and benefits of borrowing through student loans to pay for college.

Demand for Higher Education

Academic performance was used in this study as a measure of students' demand for higher education. Students' academic performance can shape their assessment of the costs and benefits of borrowing through student loans (Perna, 2008). This study found that higher academic performance, as indicated by college entrance exam test scores and college GPA, was associated with a lower probability of borrowing and lower levels of student loan debt. Existing studies have found that students who perform better academically are likely to have lower levels of debt (Harrast, 2004) and are less likely to default on their student loans (Flint, 2007; Volkwein & Szelest, 1995; Volkwein et al., 1998).

One explanation for the findings from this study is that students who perform poorly on college entrance test scores do not typically qualify for financial aid in the form of academic scholarships. For example, many students who live in states with state merit-based scholarship programs are not likely to be eligible for these financial awards if they have lower ACT/SAT test scores. These students also may not qualify for academic scholarships made available through the postsecondary institutions they attend. Receiving any academic scholarship would have

likely reduced the total amount a student needed to borrow through loans in route to earning their bachelor's degree.

For student loan borrowers, each semester enrolled in higher education provides another occasion to borrow more money. Existing research studies suggest that college GPA is strongly associated with degree completion, and students with higher GPAs are more likely to complete their bachelor's degree in a timely fashion (see Pascarella & Terenzini, 2005). Therefore, a student borrower with a lower college GPA may experience a delayed time-to-degree and thus acquire greater levels of loan debt in order to persist until graduation.

Existing research suggest that students' academic preparation and achievement are strongly associated with their decision to attend college (Ellwood & Kane, 2000; Perna & Titus, 2005). In this study, however, there was a minimal change in the overall model's variance explained (i.e. R^2) when the academic performance variables were added to both regression models. While higher academic performance resulted in a lower probability of borrowing and less loan debt in this study, students' demand for higher education appears more salient in predicting college enrollment than student loan borrowing behavior.

Supply of Resources

The block of variables representing students' supply of financial resources generated the largest increase in explained variance across both regression models. Family income and unmet need after all grant aid were used as measures of students' supply of resources in this study. Findings suggest that 2007-08 bachelor's degree graduates' financial resources played a central role in their loan borrowing behavior. These findings also support Perna's (2008) claim that access to financial resources shapes students' assessment of the costs and benefits of borrowing through student loans.

Results support existing studies that indicate students from lower-income families are more likely to borrow through student loans (Christou & Haliassos, 2006; Cunningham & Santiago, 2008). In this study, the probability of borrowing increased as the level of family income decreased. Students from lower income families may be left with little choice but to use student loans to finance their bachelor's degree since their parents do not have the financial means to help their child pay for college. The fact that lower income students borrow the most frequently may further highlight existing issues of social inequality in American higher education (Price, 2004a). Notably, when controlling for all other variables in this study, the cumulative amount of money lower-income students borrowed through student loans was significantly less than students from higher-income families. While they were the most likely to use student loans to pay for college, it is possible that receiving need-based grant aid (e.g. Pell Grants, state and institutional scholarships) helped reduce the total amount lower-income students needed to borrow in route to earning their bachelor's degree.

Controlling for all other variables, in this study a students' level of unmet financial need after receiving all grant aid was strongly associated with their probability of borrowing and their total level of loan debt. These findings are in agreement with existing research (Cunningham & Santiago, 2008). Grant aid does not have to be repaid and can reduce students' need to borrow and/or limit the amount they borrow in route to earning their bachelor's degree. Many 2007-08 bachelor's degree graduates from lower income families are eligible for and receive need-based financial aid, such as Pell Grants. However, findings from this study suggest that need-based awards alone may not be sufficient enough to help many students graduate without acquiring high levels of student loan debt.

Any efforts to assuage the rising levels of indebtedness among today's college students should give attention to students' supply of financial resources. In study after study, findings indicate these variables are strongly associated with student loan borrowing behavior. These results accentuate the need to help lower-income students identify strategies (e.g. apply for all available grant aid, attend lower-cost institutions) for earning their bachelor's degree without becoming heavily indebted. Furthermore, these findings corroborate how America's current student financial aid system, which is predominately based on loans, hinders those students who possess fewer financial resources (Price, 2004a).

Perna's (2006a) model gives particular attention to students' family income and financial aid. With regards to college choice, existing research suggest the type of financial aid received can influence students' decisions about enrolling and the type of postsecondary institution to attend (Heller, 1997; Perna & Titus, 2004). Consequently, examining student loan borrowing behavior and debt burden as a function of the specific type(s) of financial aid received (e.g. merit-based, need-based, work-study) would represent an important contribution to the extant research literature.

Expected Benefits

Students' willingness to borrow through student loans and the cumulative amount they borrow may be influenced by the benefits they expect to receive from pursuing higher education. Academic major was used a measure of expected benefits in this study since the level of income a student expects to earn in the future is strongly influence by their career choice. There were no statistically significant differences in the probability of borrowing across the eight categories of academic majors examined in this study.

Compared to students who graduated with bachelor's degrees in business/management, students with degrees in the Social/Behavioral Sciences, Education, and Health related fields had

higher levels of loan debt. It is challenging to determine precisely why students pursuing majors within these particular fields have higher average levels of loan debt than their peers. However, since these career choices may potentially lead to public service careers with relatively low earning potential (e.g. elementary school teacher, social worker), it is important to understand why students in these academic majors borrow more in route to earning their bachelor's degree.

Most existing research studies have found that academic major is not a particularly strong predictor of loan debt levels (Price, 2004a; Volkwein & Szelest, 1995; Volkwein et al., 1998). However, Harrast (2004) found that some majors (e.g. special education, computer engineering, sociology) did contribute to higher levels of debt among student borrowers. The inconclusive findings in the existing research literature signify that future studies should give greater attention to the relationship between academic major and student loan borrowing. Importantly, Perna's (2006a) model provides a lens to better understand how students' choices while enrolled (e.g. their academic major) can influence their student loan borrowing behavior.

In this study, the highest level of education ever expected was not associated with different levels of loan debt among students who did borrow. However, 2007-08 bachelor's degree graduates who expected to earn a bachelor's degree or less were significantly less likely to borrow than students who expected to earn their doctorate or first-professional degree. This finding may suggest that students who planned to attend graduate school expected they would have to borrow in order to achieve their long-term academic goals and were willing to incur higher levels of student loan debt. Conversely, 2007-08 bachelor's degree graduates who expected to earn their bachelor's or less may have been more committed to achieving this academic goal without the use of student loans.

Perna (2006a) notes that few existing studies of college choice have examined students' expected benefits from pursuing higher education. Findings from the present study suggest that expected benefits may play a role in students' willingness to borrow and the total amount of loan debt they accrue in route to earning their bachelor's degree. However, additional research on how the expected monetary and non-monetary benefits of higher education influence students' college-related decisions (to include decisions about loan borrowing) is necessary to disentangle these relationships.

Expected Costs

This study used the type of postsecondary institution attended as a measure of the expected costs associated with student loan borrowing to pursue higher education. As hypothesized, this study found that 2007-08 bachelor's degree graduates who attended private not-for-profit and private for-profit institutions were more likely to borrow and have higher loan debt levels than students attending public four-year institutions. Many existing studies have also found that students attending private institutions are more likely to borrow and have higher loan debt levels (Boushey, 2005; Kantrowitz, 2009; Steele & Baum, 2009). These results are not surprising considering that private postsecondary institutions typically charge higher tuition rates than public colleges and universities. Accordingly, students often borrow more through education loans to cover the higher costs of attending a private institution.

It should be noted that earning a bachelor's degree from a private for-profit institution is nearly synonymous with borrowing for college. Specifically, 96% of all students who graduated with their bachelor's degree from these postsecondary institutions during the 2007-08 academic year had acquired student loan debt. The average level of indebtedness among these borrowers was around \$33,000, which is approximately \$10,000 more than the average debt levels of graduates from public postsecondary institutions. Students who are considering enrolling in

private for-profits should be cognizant of the high loan debt levels accrued by many students who attended these proprietary schools. This information about borrowing can be particularly valuable as students, and their families, weigh the costs and benefits of attending a private for-profit institution.

Applying Perna's (2006a) model allows researchers to better understand how individual, familial, and institutional factors shape students' assessment of the expected costs of pursuing higher education. Expected college costs have been examined by many existing studies of college choice, as well as extant research on student loan borrowing. Collectively, findings from existing literature and from this study highlight the importance of understanding how expected costs influence the ways in which students and their families pay for college.

Institutional Characteristics

Layers 2 and 3 of Perna's (2006a) conceptual model suggest that a variety of institutional characteristics can influence student decision-making and behavior. In this study, students who attended private or foreign high schools were less likely to borrow in route to earning their bachelor's degree than students attending public high schools. Private high schools are typically more expensive than public high schools and the student body at private high schools tends to come from more affluent families. Therefore, it is plausible many students who graduated from private high schools do not need to borrow through student loans because their parents help pay for many of their college-related expenses. However, the differences in debt levels among loan borrowers who attended private and public high schools were not statistically significant.

This study found that 2007-08 bachelor's degree graduates who attended a foreign high school were less likely to borrow than students who attended a public high school. A significant number of students are likely to have been immigrants. Therefore, this finding seems to support existing research that suggests immigrants are less likely to use many financial services because

of language barriers and inexperience with America's financial institutions (Singer & Paulson, 2004). Furthermore, the average level of loan debt among student borrowers who attended a foreign high school was approximately \$4,000 less than graduates of public high schools when controlling for all other variables in this study. Even when they do borrow, many immigrant students appear to be borrowing at more conservative levels than their non-immigrant peers.

There were statistically significant differences in student loan borrowing as a result of the postsecondary institutions' degree of urbanization (i.e. city, suburb, town, rural). Surprisingly, students attending institutions located in towns were more likely to borrow through loans than students attending institutions in cities. This finding seems counterintuitive since the cost of living is typically higher in cities than in towns, and therefore one would expect students attending college in cities to be more likely to borrow. In addition, this study found that student borrowers attending institutions located in rural areas had significantly lower levels of loan debt than students attending college in cities. This finding likely reflects differences in the lower cost of living, and average tuition rates, in rural areas than in larger cities. Few studies to date have examined students' borrowing behavior as a function of their postsecondary institutions' degree of urbanization. Findings from this study may indicate the need to examine this relationship in greater detail in future research.

The Project on Student Debt (December, 2009) found that debt levels were highest among students attending higher education in the Northeast region of the United States. Conversely, the same report found the lowest debt levels for states in the West. In this study, student borrowing was examined as a function of five U.S. geographic regions. The results indicated that 2007-08 bachelor's degree graduates attending college in the Rocky Mountain/Far West region were less likely to borrow than students in the New England/Mid East region. Furthermore, compared to

the New England/Mid East region, the average debt levels among borrowers were significantly less in all other geographic regions (i.e. Great Lakes/Plains, Southeast, Southwest, Rocky Mountains/Far West).

Results from this study support findings from the Project on Student Debt's (December, 2009) report. The report suggests differences in debt levels across geographic region may be attributed to several factors. First, the New England/Mid East have more students on average attending private postsecondary institutions, which likely explains the higher loan debt levels among graduates in this region. In addition, the report indicates that western states tend to have more students attending public institutions and many of these institutions charge tuition rates that are lower than the national average. This would explain why 2007-08 bachelor's degree graduates in the Rocky Mountains/Far West region were the least likely to borrow through student loans.

As proposed by Perna's (2006a) conceptual model, findings from this study suggest that examining institutional characteristics are important in understanding students' college-related decisions. Variables such as high school and postsecondary institution type, which are germane in studies of college choice, are also relevant when examining student loan borrowing behavior. Furthermore, Perna's (2006a) model can help researchers better understand the relationship between key student and family variables (i.e. demographics, social and cultural capital) and the types of institutions students' attend.

Summary of Discussion

This chapter provided a discussion of the results from this study in relation to the extant research literature on student loan borrowing and indebtedness. The discussion was organized around the major constructs described in an adapted version of Perna's (2006a) model used as a conceptual framework to guide this study. Use of this model not only generated findings that are

consistent with existing studies, but it also provided new insights that have not been addressed in the extant research literature. Overall, the results from this study support the applicability of Perna's model for examining student loan borrowing.

In this study, students' demographic characteristics and supply of financial resources were most salient in identifying the factors associated with their decision to borrow and total level of student loan debt. Black students were the most likely to borrow among all racial/ethnic groups and had the highest average levels of loan debt. Latino and Asian students borrowed with the same probability as White students, but borrowed smaller amounts on average than all other racial/ethnic groups. In addition, females and independent students (both with and without dependents) were more likely to borrow and have higher debt levels.

In agreement with existing research, results from this study suggest that students' financial circumstances are strongly associated with their borrowing behavior. The greatest increase in explained variance across both regression models occurred with the addition of two finance variables: family income and unmet need after all grant aid. The probability of borrowing increased as students' family income decreased. Furthermore, loan borrowing and debt levels increased as students' level of unmet need increased.

The examination of students' social and cultural capital represents an important contribution to the extant research literature on student loan borrowing. In this study, 2007-08 bachelor's degree graduates who had discussed their financial aid options with their parents and/or a financial aid counselor were less likely to borrow. Students who met with a financial aid counselor also had lower levels of loan debt on average than students who did not. Parents' level of education and whether English was the primary spoken language were used as measures of

cultural capital and were significantly related to student loan borrowing. These findings help corroborate the inclusion of sociological perspectives in studies of student financial aid.

While they explained a small portion of the overall variance in each regression model, students' academic performance, major/field of study, and educational expectations were associated with student loan borrowing. Students with lower ACT/SAT test scores and college GPAs are more likely to borrow and have higher debt levels. In addition, students in several academic majors (i.e. Social/Behavioral Sciences, Education, Health) that may lead naturally into lower paying public service careers were likely to have accumulated the most loan debt. A smaller probability of borrowing was also evident for students who expected to earn no higher than a bachelor's degree. These particular findings represent a new contribution to the extant research literature on student loan borrowing.

Findings from this study also corroborate the importance of examining institutional characteristics in studies of student loan borrowing. As expected, students who attended private (both not-for-profit and for-profit) postsecondary institutions were more likely to borrow and have higher debt levels. Students who attended private or foreign high schools were less likely to borrow than students who attended high schools classified as public. In addition, the geographic location of the postsecondary institution students' attended impacted their probability of borrowing and the cumulative level of debt among borrowers. Few, if any, existing studies of student loan borrowing have examined the institutional variables analyzed in this study.

The presented study utilized the latest national dataset related to student financial aid, NPSAS:08, to examine student loan borrowing and indebtedness among 2007-08 bachelor's degree graduates. Considering the dramatic increases in student loan borrowing in recent years, this study represents a timely contribution to extant research literature. The subsequent, and final,

chapter of this study will examine the implications of these findings for policy and practice, and also offer recommendations for future research related to student loan borrowing.

CHAPTER 6 RECOMMENDATIONS AND FUTURE RESEARCH

The final chapter of this study begins by providing recommendations for improving public policies and institutional practices related to student loan borrowing and indebtedness. Next, several recommendations are discussed that can help strengthen future research studies related to these topics. In closing, this chapter provides some final thoughts about the current state of student loan borrowing and the rising levels of indebtedness among today's college students.

There is a direct relationship between the affordability of American higher education and student loan borrowing. The rising costs associated with attending higher education have forced many students to rely upon education loans in order to achieve their bachelor's degree. During the last decade, tuition and fees at public four-year universities rose at an average annual rate of 4.9%, which was considerably higher than in either of the past two decades (College Board, 2009). Therefore, it is apparent that finding ways to curtail the rapid increases in college costs represents an important strategy for reducing the number of college students who experience financial hardships as a result of their loan debt. Federal and state policymakers must make continual and concerted efforts to ensure that American higher education is affordable.

As students search for cost-effective ways to earn their bachelor's degree, the community college baccalaureate may become an increasingly popular option for students and their families. A community college baccalaureate has been defined as "one coming from public community colleges or 2-year institutions that are approved to confer baccalaureate degrees in one or more areas" (Floyd, 2006, p. 64). Approximately 30 community colleges across the country currently offer their own bachelor's degree programs. However, a growing number of states have granted the two-year institutions within their jurisdiction with the authority to offer four-year degrees in

select disciplines (Floyd & Walker, 2009). Since tuition rates and fees are often considerably lower at community colleges than at public four-year institutions, students pursuing their bachelor's degree from a community college may need to borrow less through student loans in order to earn their degree. Consequently, in the future the community college baccalaureate may place a key role in reducing the level of student loan debt among America's bachelor's degree graduates.

Recommendations for Policy and Practice

Findings from this research study have numerous implications for policy and practice. In support of existing research, these findings emphasize the importance of providing students with the basic information and skills they need to make wise decisions about borrowing for college. Accordingly, the first recommendation addresses strategies for improving students' financial literacy and money management skills. Findings from this study also suggest that financial aid counselors can play a major role a students' decision to borrow and total level of indebtedness. Two recommendations are provided that can aid high school and college financial aid counselors in becoming better resources for their students. Finally, results from this study suggest the need for public policies than help assuage the rising levels of loan indebtedness among today's college students. Therefore, the last recommendation addresses issues surrounding student aid reform.

Financial Literacy Education

In this study, statistical analysis of the NPSAS:08 data indicated that more bachelor's degree graduates are borrowing more money through student loans than ever before. Nearly 15% of all 2007-08 graduates who borrowed had accumulated \$40,000 or more in loan debt. Rising tuition rates, dwindling federal and state fiscal support for higher education, and the declining purchasing power of Pell Grants have all undoubtedly contributed to the increase in student loan borrowing (Heller & Rodgers, 2006). However, giving attention solely to these types of

exogenous factors may overlook a more fundamental issue. The extant research literature on student loan indebtedness has given less attention to the possibility that many students who borrow simply may not understand how to manage their money.

Several existing studies indicate that many students do not begin their college careers with even the basic financial management skills. For example, research suggests that high school students understand very little about money and only one-third of high school students reported feeling confident managing their own finances (ASEC, 1999). Many students are confused by interest rates on student loans and tend to underestimate the total amount of interest being accrued when they face an extended repayment period (Lewis & van Venrooji, 1995). Furthermore, Norvilitis and Santa Maria (2002) suggests that many students may overestimate their ability to repay all types of debt before they make the decision to assume debt. This lack of financial literacy is particularly troubling when considered in light of research indicating the majority of college students have favorable attitudes regarding the use of credit (Lyons, 2008; Xiao et al., 1995). It is quite possible that many students who borrow do not fully understand the consequences of acquiring debt through student loans.

These findings highlight the need to improve students' financial literacy and money management skills before they ever enter postsecondary education. Unfortunately, there is not an established policy across states for educating America's youth about financial matters (NICE, 1996). While financial literacy programs are delivered through the public education systems in some states, there are considerable differences in the services offered and in the program requirements (Norvilitis & Santa Maria, 2002). In addition, one report found 30% of high school students indicated their parents had not discussed financial management strategies with them

(ASEC, 1999). These findings may suggest that when beginning their college careers, many students have received little or no guidance about how to manage their personal finances.

A public policy requiring each state to provide financial literacy courses and/or programs to students enrolled in public secondary education could help America's youth improve their financial management skills. Completing a financial literacy program could help expose America's youth to the foundational knowledge and skills they need to make smarter financial decisions through their lifetime. Consequently, acquiring these financial management skills before attending college could help students, and their families, make better decisions about borrowing through student loans.

Financial Aid Counseling

A growing body of literature suggests that college students and their parents are poorly informed about college costs and the accessibility of financial aid (Horn, Chen, & Chapman, 2003; Long, 2004; Perna, 2006b; Vargas, 2004). In addition, researchers have found that many students have considerable misperceptions about using student loans and are likely to underestimate the total costs of their loan borrowing (King & Frishberg, 2001). These findings suggest that improving students' understanding of the financial aid process and the ways in which student loans are often embedded within larger financial aid packages could help assuage the rising levels of indebtedness among today's college graduates.

High school, and college, financial aid counselors represent an important resource for students seeking information about borrowing through students loans. Researchers have found that students and their parents view high school financial aid counselors as primary and reliable sources of information about college costs and financial aid (McDonough, 2004). However, in recent years studies have found that many high school financial aid counselors are relatively uninformed about college financial aid (McDonough, 2005). Discouragingly, the least informed

counselors are often found in low-income schools where the student body has very little knowledge about student loan programs (Perna, 2008). Many high school counselors are also hesitant and unsure of how to advise students regarding the amount to borrow through student loans (Perna, 2008). Collectively, these findings suggest that many financial aid counselors need additional training and professional development in order to become reliable and helpful resources for students who have specific questions about using student loans to pay for college.

Loan counseling strategies. When controlling for all other variables, this study found that 2007-08 bachelor's degree graduates who discussed their financial aid options with a high school or college financial aid counselor were less likely to borrow and had lower levels of loan debt. This may indicate that personal interactions with financial counselors can help students make better decisions about using loans to pay for college. Counselors may have assisted students in applying for grant aid that eliminated their need to use loans, or helped them decide not to borrow the maximum loan amount each semester. Regardless, this finding further emphasizes the need for counselors to be informed and well-trained about college financial aid and student loan policies.

Results from this study can provide high school and college financial aid counselors with valuable information about loan borrowing they can use to improve the services they provide for students. For example, this study identified several factors (e.g. race/ethnicity, level of unmet need, academic performance, postsecondary institution type) that are strongly associated with higher levels of student loan debt. Counselors can use this information to better understand those student populations who are 'at-risk' of acquiring excessive levels of debt and then work to develop targeted strategies to help these borrowers. High school counselors may also explain to college-bound students the considerable differences in the levels of loan debt held by graduates

of different types of postsecondary institutions (e.g. public versus private). Promisingly, well-informed and trained financial aid counselors have the potential to help many student borrowers reduce the total amount of loan debt they accrue in route to earning their bachelor's degree.

Financial Aid Reform

Findings from this study corroborate the influential role that family income and grant aid play in students' loan borrowing behavior and level of indebtedness. In particular, 2007-08 bachelor's degree graduates who received lower levels of grant aid were more likely to have higher levels of loan debt than their peers. These findings are in agreement with numerous existing studies that suggest students' level of financial resources is strongly associated with their loan borrowing behavior (Kantrowitz, 2009; King & Bannon, 2002; Perna, 2008; Price, 2004a). Lower-income students and those who receive little or no grant aid are often forced to borrow in order to cover the rising costs associated with pursuing higher education.

Existing studies and reports have recommended that policymakers consider increasing the amount of available grant aid to assuage students' growing reliance on loans to pay for college (King & Bannon, 2002; College Board, 2008). Many of these recommendations have focused specifically on increasing Pell Grant award amounts to help reduce the rising debt burden held by borrowers from lower-income families. Some studies have also called for a restructuring of the federal student loan programs that would result in cost savings to borrowers (King & Bannon, 2002; Boushey, 2005). Promisingly, in March 2010 President Barack Obama signed into law a new student loan reform bill. The law gives attention to the major recommendations offered in numerous existing studies by increasing the annual Pell Grant award amounts and introducing landmark changes to the way federal student loans are disbursed.

This new law has considerable implications for future research on student loan borrowing and is therefore discussed in greater detail in the following section. However, here it is important

to discuss the implications of this new law in light of the findings from this study. Consistent with existing research, this study found that lower-income students were more likely to borrow through student loans than high-income students. In addition, loan debt burden increased as students' level of unmet financial need after grant aid increased. These findings suggest that raising the maximum Pell Grant award amount has the potential to help assuage the cumulative amount that lower-income students borrow through loans in route to earning their bachelor's degree.

In years past, other federal legislation has increased Pell Grant award amounts but these increases have failed to keep pace with inflation (Curs, Singell, & Waddell, 2007). An important element of the new law is that Pell Grants are scheduled to increase at the rate of inflation in the years to come. The maximum Pell Grant award amount is expected to be \$5,975 by 2017 (Baker & Herszenhorn, 2010). Larger Pell Grant awards that account for inflation costs can help reduce the level of unmet financial need among lower-income students and thus reduce the amount they need to borrow through student loans. While this aspect of the new law is not a panacea, it does represent a positive step towards alleviating the high student loan debt burden among borrowers from lower-income families.

The new law also included modifications to several relatively new federal student loan forgiveness programs. These programs, which are further discussed in the following section, are intended to help reduce the burden of repayment for college graduates who have outstanding student loan debt. Importantly, these programs have the potential to reduce financial hardships among borrowers after they graduate and may help lower student loan default rates. However, these programs appear to only address the symptoms of the student debt problem and not the root cause. While providing some degree of financial protection for college graduates who have large

amounts of federal student loan debt, these programs do little to help students from acquiring high debt burden in the first place. More preventative strategies, such as financial literacy education and financial aid counseling, are needed to help students make wise decisions about borrowing throughout their college careers.

Moving forward, federal and state lawmakers must recognize that student financial aid policies can have a significant influence on student loan borrowing behavior and debt burden. Financial aid program eligibility requirements determine the types of college students who receive funding. In addition, the level of political and fiscal support for existing financial aid programs determines how much money for college is available for students and their families. Consequently, policymakers should closely monitor the impact of the new federal student financial aid policies to determine how they affect student loan borrowing and indebtedness.

Recommendations for Future Research

The present study provides timely findings regarding student loan borrowing and debt levels among America's recent bachelor's degree graduates. However, many important research issues surrounding the topic of student loan borrowing remain underexplored in the extant research literature. The findings presented in this study illuminate four areas for future research on student borrowing and indebtedness: federal student financial aid policy, Perna's (2006a) conceptual model, credit card debt, and methodological approaches.

New Federal Student Financial Aid Policy

At the time this research study was completed, President Barack Obama had recently signed a student loan reform bill into law that is certain to bring about significant changes to America's student loan system. This landmark legislation represents an end to the bank-based system for distributing federal subsidized student loans and essentially removes private lenders from the federal student loan system (Basken, 2010). These changes to the federal student loan

programs are intended to help reduce the burden of repayment for college graduates who have outstanding loan debt. In addition, the new law will also increase Pell Grant awards at the rate of inflation and invest an additional \$2 billion in community colleges over the next four years.

Considering the ramifications this new law will have on student borrowing behavior, researchers who plan to examine student loan borrowing and indebtedness in the future will certainly want to examine the impact of these new public policies. One recommendation for future research is to revisit the two research questions addressed in this study using the next NPSAS dataset when it becomes available in 2012. This methodological design would allow researchers to examine students' probability of borrowing and the level of loan debt among borrowers before and after the law took effect. Future research may also want to examine the ways in which increases in Pell Grant awards influenced student loan borrowing among low-income students.

In addition to this freshly minted law, two federal programs have been established within the last three years that may also significantly impact student loan borrowing and indebtedness. These programs are the Income Based Repayment plan and the Public Service Loan Forgiveness program. Since they are both relatively new, researchers have not yet explored how these federal programs influence student borrowing. Therefore, future studies of student loan borrowing and debt burden should consider exploring the impact of these two federal initiatives.

The Income Based Repayment (IBR) plan was established in July 2009 and is intended to offer financial protection for students who rely on federal loans (Steele & Baum, 2009). The program guarantees that monthly debt repayments will not exceed 15% of the borrower's discretionary income. Furthermore, the program ensures that any remaining federal student loan debt will be forgiven after 25 years of qualifying repayments. Future research studies on student

loan debt should begin to examine whether this program increases or decreases the cumulative amount students borrow through the federal lending programs. In particular, are some students borrowing more through federal loans because they view this program as a panacea to the problem of excessive debt burden? How does the IBR impact student loan default rates?

The Public Service Loan Forgiveness (PSLF) program was established in 2007 and forgives a borrower's remaining federal student loan debt after 10 years of successful loan repayment and eligible employment. In order for a student to qualify, he/she must be employed in some form of public service career for 10 years, such as jobs in government and non-profit organizations. The program is designed to remove student loan debt as a disincentive to pursuing a public service career. In future research, important questions for investigation surrounding the PSLF program may include: Is there an increase in number of college graduates nationwide pursuing public service careers as a direct result of this program? What percentage of borrowers who intended to capitalize on the program reaches the 10 year employment requirement? Do students participating in this program borrow more through loans than their peers since they may expect a considerable portion of their loan debt to be forgiven?

Perna's Conceptual Model

Most existing research studies examining issues related to student loan borrowing and indebtedness have relied heavily on human capital theory. However, within the last decade several researchers have described the limitations of relying exclusively on the rational human capital approach to examine college student decision making (Dowd, 2008; Perna, 2006a; St. John & Paulsen, 2001). Therefore, an adapted version of Perna's (2006a) proposed model of college student choice was used as a conceptual framework to guide the present study. This relatively new conceptual model builds upon the strengths of human capital theory, while recognizing that student decision making occurs within a situated context and is influenced by

other exogenous factors (e.g. familial, institutional, and policy characteristics). Researchers are recommended to consider using Perna's (2006a) model as a framework in future studies that examine student loan borrowing and debt burden.

Future studies on student loan borrowing should give particular attention to Layer 4 (i.e. the social, economic, and public policy context) of Perna's conceptual model. Since NPSAS:08 is a cross-sectional dataset, it was not possible to directly address these variables in the present study. However, research has shown that changes to existing federal student loan policies can significantly impact student borrowing behavior (see King, 1999) and the economic context (e.g. the latest economic downturn) likely impacts students' need to borrow through student loans and the total amount they borrow. Additionally, examining Layer 4 of the model may be particularly important in future studies considering the newly established federal student loan legislation and programs described above.

Findings from this research study corroborate the relevance of using Perna's conceptual model in future studies related to student loan borrowing. For example, this study found that students' level of social and cultural capital, as well as characteristics of the institutions students attend (key constructs in Perna's model), can influence their borrowing behavior. Many results from this study also support existing research regarding the factors associated with higher levels of student loan debt among borrowers (see Boushey, 2005; Harrast, 2004; Kantrowitz, 2009; Price, 2004a). Furthermore, Perna (2008) has demonstrated the applicability of the conceptual model to the study of student loan borrowing by examining high school students' perceptions of using education loans to pay for college. The application of Perna's conceptual model in future studies has the potential to provide a more complete understanding of the factors that influence student loan borrowing behavior and debt levels.

Credit Card Debt

Examining students' loan debt burden has important implications for policy and practice, and can also help assuage financial hardships among student borrowers. However, research on student loan debt may not tell the complete picture regarding college students' overall level of indebtedness. Debt accrued through education loans represents only one source of debt for many of today's college students. Research suggest that a growing number of students are relying on credit cards and there are concerns about those students who are acquiring burdensome levels of credit card debt while enrolled in college (Hayhoe et al.; Lyons, 2004; Norvilitis et al., 2003). Therefore, future studies of student indebtedness should consider examining the total level of debt students owe from both education loans and credit cards.

The most recent data suggest the majority of undergraduates (84%) own at least once credit card and carry an average monthly balance of \$3,173 (Sallie Mae, 2009). An overwhelming majority (92%) of undergraduate credit card holders paid for direct education expenses (i.e. textbooks, school supplies) with their cards and 30% used a credit card to pay tuition. Overall, the Sallie Mae report found record highs in the percentage of students using credit cards, the average number of cards they carry, and their average balance. These latest data corroborate that credit card debt is a reality for a growing percentage of today's college students.

Numerous studies and reports have examined the credit card behavior and debt levels of college students (Grable & Joo, 2006; Lyons, 2008; Norvilitis et al., 2006; Norvilitis, Szablicki, & Wilson, 2002). However, a review of the extant research literature revealed there are no known empirical studies that examine students' total level of debt from both student loans *and* credit cards. Future research that examines students' education loan and credit card debt could provide valuable insights about the true financial hardships these borrowers face during repayment.

Methodological Approaches

In recent years, researchers have drawn attention to an array of methodological problems that plague existing studies of student financial aid (see Cellini, 2008; Chen, 2008; Dowd, 2008). While every research design has inherent limitations, researchers who plan to conduct studies of student loan borrowing should familiarize themselves with the methodological problems and proposed solutions identified in the research literature. Future research studies that provide an accurate assessment of student loan borrowing and indebtedness are essential to the development of effective public policies and institutional practices.

A second methodological recommendation involves issues surrounding federal data collection. Existing research suggests that complex constructs such as social and cultural capital may influence students' borrowing behavior (Dowd, 2008; Perna, 2006a). Accordingly, the present study used a total of four NPSAS:08 variables related to these constructs and each of these variables did result in statistically significant findings. However, the NPSAS:08 dataset does not contain a wide selection of variables that allow researchers to examine students' social and cultural capital in great detail. Dowd (2008) has also suggested that many of the federal education datasets do not collect information on psychological variables, like self-efficacy or locus of control that may influence students' borrowing behavior. Therefore, a recommendation from this study is that the federal education datasets (i.e. NCES and NSF) begin to incorporate additional measures of these complex constructs in future surveys related to financial aid. The availability of these variables in the NCES and NSF datasets would allow researchers to examine with greater precision how key sociological and psychology factors influence students' loan borrowing behavior.

Most existing studies related to student loan borrowing have been conducted using quantitative methods and many have been conducted using national data. However, quantitative

studies that utilize federal education datasets represent only one approach to the study of loan borrowing and debt burden among college students. As St. John (2006) suggests, qualitative research methods can provide valuable insights about how financial aid influences students' decision making and behavior. Existing qualitative studies have contributed to a better understanding of students' attitudes about loan borrowing and perceptions of their debt burden (Baum & O'Malley, 2003; Davies & Lea, 1995; Perna, 2008). Therefore, capable researchers are recommended to consider applying qualitative, or mixed, methods when examining student loan borrowing in future studies.

Closing Words

Student loan borrowing is a dynamic and evolving issue in American higher education that deserves serious attention from researchers and policymakers. There is a pressing need for high-quality and timely research on this topic that will inform public policy and institutional practice. This line of research can help ensure that for thousands of college students who graduated each year, the thrill of earning a bachelor's degree is not overshadowed by the burden of repaying excessive amounts of student loan debt.

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BIOGRAPHICAL SKETCH

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