

Dynamic Interactions and Intersubjectivity: Challenges to Causal Modeling in Studies of College Student Debt

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Loans are a central component of college finance, yet research has generated a dearth of strong evidence of their effect on student choices. This article examines challenges to causal modeling regarding the effects of borrowing and the prospects of indebtedness on students' college-going behaviors. Statistical estimates of causal effects are confounded by dynamic interactions between the decision to borrow and the characteristics of borrowers (endogeneity), their degree and earnings expectations (self-selection bias), and cumulative debt (temporal and threshold effects). Furthermore, interpretive research illustrates that college counseling is highly intersubjective, with application and financial aid advice predicated on perceptions of student socioeconomic class and degree prospects. These studies indicate the need for an interdisciplinary research agenda more inclusive of sociopsychological perspectives.

KEYWORDS: college, financial aid, loans, borrowing, risk, cost sharing, debt, higher education, interaction effects, mixed methods, student loans

Higher education in the United States is financed by federal, state, and local governments and by private individuals and families. A substantial amount of public funding is allocated through the student financial aid system. The College Board (2006), which issues the annual *Trends in Student Aid*, defines aid as “grants from all sources, loans and work-study assistance from the federal government, and federal education tax credits and deductions” (p. 2). Since the first *Trends* report (in 1983), federal loans of various types—subsidized, unsubsidized, parental—have come to constitute a growing share of aid dollars. By 2006, 51% of student aid was in the form of loans, and the nearly \$69 billion in federal loans dwarfed the size of federal grants, at close to \$19 billion, and even exceeded annual appropriations by state governments for direct operational funding of public colleges and universities, at \$60 billion. These estimates exclude \$17.3 billion in nonfederal, private loans, which are unsubsidized and borrowed at market interest rates. The private

loan volume in 2005–2006 was roughly 25% of the federal loan volume, a dramatic increase from only 5% in 1994–1995. (For a review of trends in college loan debt, see King, 2005.)

The growth of loans represents a shift from public to private financing of higher education (Heller & Rogers, 2006). The reliance on individual, family, and private sector investments is well established in the United States, relative to other countries, but governments throughout the world are developing lending systems to institute cost-sharing arrangements and to reduce the overall tax burden of higher education (Johnstone, 2004, 2005). Today, the primary beneficiaries of a college education are being called on to make larger contributions to cover college costs. This trend certainly reflects an emphasis on the private benefits of education, rather than the public benefits (Callender & Jackson, 2005; Heller & Rogers, 2006; Johnstone, 2004), but there is also a growing “recognition that university education financed without direct contributions from the private beneficiaries is in essence regressive and inequitable” (Chapman & Greenaway, 2006, p. 1071).

Unfortunately, expecting students to borrow to pay for higher education appears to significantly dampen the college aspirations of students from lower socioeconomic classes, who are at greater risk of default and high repayment burden (Callender & Jackson, 2005; Gladieux & Perna, 2005). To mitigate such risks, income-contingent loan repayment plans have been adopted in Britain, Australia, New Zealand, South Africa, and elsewhere (Chapman & Greenaway, 2006; Greenaway & Haynes, 2003; Johnstone, 2004) and proposed as a strategy for achieving greater equity and efficiency in the U.S. financial aid system (see, e.g., Kane, 1999).

Student loans are clearly a central component of higher education finance systems worldwide. Less clear are the effects of borrowing and the prospects of indebtedness on the full continuum of decision making among college students and prospective college students—from initial application and enrollment to choice of major and career goals and, finally, to actual attainment of undergraduate, graduate, and professional degrees. Research on the effects of loans on college-going choices has generated inconclusive and sometimes contradictory results, and several key areas of inquiry have been neglected. Researchers who study financial aid have focused on estimating the magnitude, direction, and significance of the effects of different forms of aid on college enrollment and outcomes. Yet, there is a dearth of strong evidence concerning the nature of these effects because statistical estimates are confounded by a number of dynamic interactions between college choices, educational expectations, and a student’s (or family’s) college financing strategy. These interactions include those created by students’ self-selection into particular colleges and forms of aid and self-help (grants, scholarships, loans, work–study aid, employment), differential risks of indebtedness by social class, and the temporal and threshold effects resulting from greater sunk costs and repayment burdens with each year of study. As discussed in this review, new statistical techniques are attracting attention and greater use to disentangle these dynamic interactions and complex relationships.

Furthermore, emerging case study research highlights the intersubjective nature of the provision and receipt of critical information about the costs and benefits of college, suggesting that dynamic interactions are a shared research dilemma for researchers who are conducting quantitative and qualitative data analyses. Until recently, little research had been conducted about the effects of the different forms

of financial aid on students' awareness and understanding of the costs and potential benefits of college (Archer & Hutchings, 2000; Hu & Hossler, 2000; Mundel & Coles, 2004; Perna, 2004). Despite growing attention to the critical role of financial aid information in conveying the message of college opportunity to students (Advisory Committee on Student Financial Assistance, 2005; Kane, 1999), little empirical research has been conducted to investigate the knowledge, attitudes, and behaviors of high school counselors in their role as financial aid advisors (McDonough, 2004; McDonough & Calderone, 2006) and the ways in which students make sense of and act on the financial aid information they do receive (Luna De La Rosa, 2006; Tierney & Venegas, 2006; Venegas, 2006). Yet, for students in high schools and colleges, relationships with counselors, teachers, peers, and family members play a critical role in shaping collegiate identity and motivation (González, Stone, & Jovel, 2003; Pak, Bensimon, Malcom, Marquez, & Park, 2006; Stanton-Salazar, 1997).

To shed light on these interpersonal dynamics, ethnographic researchers are beginning to investigate the ways that a student's culture and family affluence shape access to information and guidance about financial aid. In the study of students' college-going behaviors, the deliberative, calculative thinking that has been the staple of the economist's rational choice model (Becker, 1976, 1993; Elster, 1986; Kaufman, 1999) is now being supplemented by insights from a range of fields, including education, sociology, psychology, and cultural studies (Archer & Hutchings, 2000; McDonough, 1994; McDonough & Calderone, 2006; Nora, Barlow, & Crisp, 2006; Perna, 2000; St. John, 2003, 2006; St. John, Cabrera, Nora, & Asker, 2000; Tierney & Venegas, 2006; Trent, Lee, & Owens-Nicholson, 2006). These sociocultural studies, which are few in number relative to the large body of statistical studies concerning the effects of aid on college enrollment and outcomes, highlight the affective component of students' receptivity to financial aid information and their willingness to borrow.

Insights from these studies will valuably shape a broader research agenda drawing on multiple methods and disciplines. The observation that the meaning of money is socially constructed (McDonough & Calderone, 2006) calls into question the causal logic, construed at it simplest, that merely providing students with information about financial aid options provides them with equal opportunity to attend college (Callender & Jackson, 2005). An individual's capacity to act on financial aid information is mediated by significant others in their home environment and by institutional agents in educational environments (Stanton-Salazar, 1997) who signal the potential student's prospects for success in college. It appears that potential college students cannot effectively act on higher education opportunities until they are motivated by the belief that college opportunities and benefits are for them.

To determine the equity and efficiency of college loans, it is important to understand how students of different backgrounds decipher the risks and potential rewards of borrowing to attend college. This is especially true given the real possibilities of loan default (Gladieux & Perna, 2005) or high debt burden, which falls heavily in the United States on low-income students and students who are African American or Latino (Price, 2004). Conversely, students with relatively high risk aversion may miss out on the opportunities that borrowing affords, such as enrollment at expensive, high-quality, prestigious institutions whose degrees lead to elite graduate and professional schools as well as rewarding careers. Students' poor

understanding of the role that loans play in structuring collegiate opportunities is illustrated by their borrowing behavior among the various types of institutions in the United States. Not surprisingly, students at expensive private and for-profit institutions are most likely to borrow and to borrow the largest amounts. About a third of students in the generally low-cost community college sector borrowed in 2003–2004, accumulating a median debt load of \$6,100 on the way to earning an associate's degree (College Board, 2006). In comparison, bachelor degree holders accumulated median debt loads of \$19,300, indicating the much greater personal investment typically necessary to earn the higher degree. Given that 62% of degree recipients from 4-year public colleges and 74% from private 4-year schools borrowed, access to the baccalaureate is largely conditioned on one's willingness to borrow. This tendency is also true at the graduate and professional degree level, where loans are a critical funding source.

Furthermore, as Price and Davis (2006) emphasized in analyzing the borrowing behavior among a national cohort of 4-year college students who had received institutional aid in their first year, "a willingness or hesitancy to borrow" (p. 35) may be a determinant of timely degree completion within 6 years. Price's descriptive statistical analyses of the Beginning Postsecondary Students Longitudinal Study data of 1995–1996 show that degree completers borrowed at rates 2 to 3 times that of noncompleters in the later years of college. Price observed that among degree completers at public and private institutions, average loan amounts doubled between the first and fourth year of college, from \$1,000 to \$2,000 per year at public colleges and from \$1,500 to \$3,000 at private colleges. Those who avoided borrowing may well have offset the reduced aid package by studying part-time and working more hours, which are both strategies that lower the chances of degree completion. Though these analyses did not control for student ability and motivation, it appears that loans structure opportunities for enrollment at different types of institutions, as well as the prospects of degree completion.

This review presents a synthesis of research findings from economic, sociological, educational, and policy studies of the effects of borrowing and the prospects of indebtedness on college-going decisions. As such, it indicates the need for an expanded interdisciplinary research agenda to accurately inform higher education finance policies. The synthesis of the literature is presented in two sections, with the first discussing statistical research, challenges, and emerging research techniques and with the second reviewing the findings of sociocultural and policy studies of students' knowledge of college finance and then considering their implications for an expanded research agenda on loans and indebtedness.¹ The literature review focuses on studies that include loans as a predictor of student enrollment outcomes, but it broadens to studies of other types of aid and financial aid advising in general, when these illustrate innovative statistical techniques and emerging conceptual frameworks. Finally, this article argues that the next generation of scholarship on college loans will be enhanced by incorporating sociocultural and psychological constructs into the prevailing economic view of rational decision making in collegiate choice.

Statistical Research on the Effects of Loans on College-Going Behaviors

The effect that loans have on students' college enrollment decisions is multidimensional. On the positive side, loans remove what economists call credit

constraints and what others know well as lack of cash. When interest rates are held low on government loans and inflation rises, loan dollars are an extremely valuable asset for college students. Unlike grants, loans are not free money. Yet, taking into account depreciation of the value of a dollar over time because of inflation and the likely future returns to a college degree, the money that students receive in hand while enrolled in college has an estimated value roughly equivalent to 50 cents per dollar (Asker, 2003; Linsenmeier, Rosen, & Rouse, 2001).²

However, loans are a form of tuition subsidy that can carry negative effects owing to the psychological stress of future loan repayment (Archer & Hutchings, 2000; Nora et al., 2006). The affective component of financial aid includes satisfaction with one's ability to pay for college; it "embodies the student's perceptions regarding her/his financial circumstances" (St. John et al., 2000, p. 37; see also, Cabrera, Stampen, & Hansen, 1990; Metcalf, 2005).

From this perspective, when students receive financial aid but continue to have unmet financial need, the positive effects of their receiving aid will be bundled with the negative effects of college enrollment stemming from their dissatisfaction, stress, and uncertainty under those financial circumstances (Nora et al., 2006). Given the high rates of attrition in community colleges and open access 4-year colleges, many students who take loans will never graduate and will not be in a position to realize educational investment returns (Gladieux & Perna, 2005). In these cases, loan repayment will be a financial burden. This scenario implies that, with all else being equal, students borrow to attend colleges with low degree completion rates will assess the net benefit of their educational investment more negatively than will students who did not borrow or who attended through grants alone. More generally, no borrower can completely forecast what surprises life might throw at them that could make loan repayment onerous.

Mixed Empirical Findings

Not surprisingly, given the multidirectional effects of indebtedness, empirical studies have arrived at inconsistent findings regarding the effect of borrowing on student educational outcomes, such as enrollment, reenrollment (or persistence), and degree attainment. In general, the results indicate that loans do promote college enrollment (Dynarski, 2002b; Heller, 1997; St. John, 1990a) and that they influence a student's choice of college among competing offers (Avery & Hoxby, 2004); but these positive effects appear to differ by income and racial/ethnic group (Callender & Jackson, 2005; Dynarski, 2002a; Kim, 2004), as well as by U.S. immigrant and nativity status (Caliber Associates, 2003; Pachon & Zarate, 2005; Tornatzky, Cutler, & Lee, 2002).

For example, in a study of national data, Perna (2000) found that loans have a highly negative effect on the enrollment decisions of African American students. Similarly, Jackson (1990) reported that although African American students are more responsive to financial aid than White students are, grants have a positive effect on their enrollment and loans do not. Furthermore, Linsenmeier et al. (2001) have provided evidence to support the view that minority students respond differently to loans and grants as a form of financial aid that do White students and to a degree greater than that of White students. They found that the replacement of loans with grant aid, in the financial aid packages offered to students who were admitted to a prestigious Northeastern university, had a greater effect on the enrollment of

low-income minority students than it did on that of low-income students as a whole. In a study conducted in the United Kingdom, Callender and Jackson (2005) found that when compared to affluent peers, students of lower social class (a) hold attitudes that are more risk averse and (b) are more likely to decide against college enrollment because of their fear of debt. However, there is some evidence from Australia that the introduction of income-contingent loans has not reduced the enrollment share of less affluent students (Chapman & Greenaway, 2006).

The opportunity to study the effects of loans on the enrollment of Hispanic students of varying national origin and immigrant generational status has been limited by the underrepresentation of this group in the 4-year sector and the nearly exclusive reliance on grants by Latinos enrolled in the 2-year sector (Olivas, 1985, 1986; Santiago & Cunningham, 2005). In addition, the major federal financial aid surveys—the National Postsecondary Student Aid Study and the Beginning Postsecondary Students Longitudinal Study—do not oversample ethnic groups who are underrepresented in higher education (Nora & Horvath, 1989), thus making it difficult to obtain precise estimates disaggregated by meaningful racial/ethnic categories.

The results of studies regarding the effects of loans on students' decisions to reenroll beyond the first year of college have had even more mixed results. Researchers have studied persistence (reenrollment) from the first fall semester to the first spring semester, to the second and subsequent years, to the degree (referred to as *degree attainment*), and to dropout at any time over a number of years. Research analyzing federal survey databases and focusing on student persistence in 4-year colleges has shown positive effects of loans on reenrollment to the second year (St. John, 1990b) and on reducing the chances of dropping out (Chen, 2005) but negative effects from the first semester to the second, particularly in samples of low-income students (Paulsen & St. John, 2002; St. John, Andrieu, Oescher, & Starkey, 1994; St. John & Starkey, 1995).³

Researchers have also analyzed student persistence using institutional and state-level data. A study of students at one 4-year institution found negative effects of loans (DesJardins, Ahlburg, & McCall, 2002), whereas at a different institution another study found positive effects for government-subsidized loans and an insignificant effect for unsubsidized loans (Singell, 2002a). In contrast, Titus (2000), studying data from the Maryland Higher Education Commission and the University System of Maryland, found that loans had no significant effect for high- or low-income students on persistence to the second year of college. Stampen and Cabrera (1988), studying University of Wisconsin System data, also found insignificant effects of loans but noted that borrowers tend to be among the highest-income students in their sample.

The results of four studies limited to community college samples offer contradictory evidence regarding the effects that loans have on college student persistence. Researchers analyzing federal data have obtained results indicating positive (Cofer & Somers, 1999), negative (Author, 2006), and insignificant effects (Hippensteel, St. John, & Starkey, 1996; St. John et al., 1994). Examining degree attainment in the more broadly defined subbaccalaureate sector has similarly lead to nuanced results, as Rogers (2005) found when analyzing the effects of borrowing in the first year of enrollment (positive) and in subsequent years (negative).

Looking beyond undergraduate enrollment, Millet (2003) conducted an exhaustive review of the literature, examining the effects of undergraduate debt on graduate and first professional degree enrollment and, concluded that the results are equivocal, with researchers finding positive and negative effects, as well as no significant effect at all. Her own findings, based on analyses of the national Baccalaureate and Beyond data of 1992–1993, indicate that undergraduate debt does have a negative effect on application to graduate school but does not have a significant effect on enrollment in the graduate program of first choice once accepted.

Statistical Challenges

Not only do these studies provide conflicting evidence about the role that loans play in promoting college enrollment and degree attainment; they are also subject to a strong statistical critique that has gained widespread acceptance among economists and statisticians, and this includes the entire body of literature estimating the effects of loans on students' college-going behaviors using the federal longitudinal databases, as well as many of the studies of institutional and state data. This critique argues that these databases do not provide sufficient information to disentangle the effect of student characteristics that lead students to make certain kinds of college choices (such as what type of college to enroll in or how to finance college) from the effect of these same qualities on the likelihood of persistence and degree completion.

This is especially problematic because, as DesJardins, Ahlburg, and McCall (2006) point out in arguing the need for richer statistical models, financial aid packages are tailored to the characteristics of applicants. Institutions attempt to maximize the use of their aid dollars by offering more lucrative packages to students who are viewed as being more desirable and who are more likely to be swayed by the offer of aid (Ehrenberg & Sherman, 1984). The financial aid package is structured to increase the students' probability of enrollment at the margin of accepting an offer or enrolling at a competitor, without wasting valuable aid dollars on students who would enroll if offered a lesser aid package.

DesJardin and colleagues' study (2006) showed that the financial aid that students expect to receive at different institutions influences their application and enrollment decisions. In addition, Hilmer (1998) has shown that a student's decision about what type of institution to attend—in his study, either a community college or a university—depends on the student's expectation of his or her chances of completing a degree. Therefore, to interpret a student's receipt of an aid package as having an effect independent of the student's own characteristics is problematic. Students essentially self-select into their preferred financial aid package from among those offered to them, with the choice set of offers conditioned on their initial application behavior. These dynamic interactions between the student's application and choice behaviors and the institutional financial aid awards undermine the assumptions of causal modeling that treat the type and amount of aid offered as external (exogenous) predictors of college enrollment and educational outcomes.

In addition, some characteristics that affect borrowing and a student's willingness to accept a type of financial aid package are difficult to observe and absent from available data (Trent et al., 2006). For example, a student who borrows may

well have a greater sense of self-efficacy than that of another student with otherwise similar academic and demographic characteristics who does not borrow. This sense of self-efficacy, which in survey data is measured poorly (if at all), has a positive effect on the student's educational success. Given that the student's borrowing is observed but that her or his self-efficacy is not, the positive effect of strong self-efficacy is erroneously attributed to the fact that the student borrowed. The effects of these unobservables are unfortunately captured in the error term of the statistical model, thereby violating basic assumptions of regression analysis and resulting in biased parameter estimates.

These statistical issues—specifically, self-selection bias (expectations regarding degree) and endogeneity (personal characteristics; Heckman, 1979; Millimet, 2001)—greatly diminish confidence in the conclusions from the body of research that utilized single-stage regression analysis as the primary analytical method (Alon, 2005; Bettinger, 2004; DesJardins et al., 2006; Dynarski, 2002a; Linsenmeier et al., 2001; Titus, forthcoming). Not only do these statistical biases undermine the precision of the estimates, but they can also affect the estimated magnitude and even the direction of the effect. Consequently, it is not possible to reach generalized conclusions about the direction or magnitude of the bias in any given model.

A more fundamental conceptual challenge arises in interpreting the effects of greater or lesser loan amounts in relation to other forms of aid. For example, it is difficult to observe from available data whether student borrowing replaces or supplements grant aid. If loans replace grants, an observed negative effect of borrowing may be due to the negative effect of losing grant aid. If loans supplement grants, the additional funding may provide the extra dollars necessary to enable students to enroll in college full-time and select a higher-priced and potentially higher-quality institution. Researchers have explored the effects of loans relative to unmet need (St. John, 2003) and thresholds of need in public and private colleges (Kim, 2005). DesJardins et al. (2006) concluded that students' responsiveness to financial aid is sensitive to the base level of aid from which the effect is calculated, but their study did not distinguish between loans, grants, and other aid and the interactions among the types of aid typically composing a financial aid package.

Further presenting statistical challenges is the sequential and recurring nature of enrollment decisions both before and during college as students formally and informally assess their probabilities of academic success (Altonji, 1993; Beekhoven, De Jong, & Van Hout, 2002; Chen, 2005; DesJardins, Ahlburg, et al., 2002; DesJardins et al., 2006; DesJardins, McCall, Ahlburg, & Moye, 2002; Hilmer, 1998). These temporal dimensions regarding the effects of aid have been investigated through event history and two-stage modeling (DesJardins, Ahlburg, et al., 2002; DesJardins et al., 2006; DesJardins, McCall, et al., 2002) that incorporate the view that student decision making is forward-looking and time dependent. Generally speaking, however, the available cross-sectional survey data have severely constrained investigations of the dynamic, temporal interactions among students' expectations of aid, aid offers, actual aid amounts received, total college costs, students' ability to pay, and ultimate educational and career expectations.

Other statistical challenges abound. As noted, the response to loans as a form of financial aid probably differs by a student's socioeconomic status and by his or her racial/ethnic characteristics, but only recently have researchers begun to estimate those differences, either by including interaction terms in statistical models

(Callender & Jackson, 2005; Chen, 2005; Kim, 2004, 2005; Price, 2004) or by separately estimating the effects for different groups (Avery & Hoxby, 2004; Paulsen & St. John, 2002; Titus, 2003). Potential differences in borrowing effects among subgroups of Hispanic and Asian national origin are not addressed in the statistical literature, even though the economic, demographic, and cultural characteristics of Cuban Americans and Mexican Americans are known to be quite different; the same can be said for third-generation Japanese Americans, in contrast to Cambodian immigrant groups, for example. National survey data and most state and institutional data do not have enough cases of students with these characteristics to enable such investigations.

Other statistical challenges include the poor availability of goodness-of-fit statistics to assess how well logistic regression models are functioning to predict student behavior (Hosmer & Lemeshow, 2000; Long, 1997; Long & Freese, 2001; Peng, So, Stage, & St. John, 2002), the sometimes-inaccurate use of strategies to determine which results are significant (Thomas & Heck, 2001), and an overemphasis on results that describe typical students at the mean rather than students with a variety of characteristics of interest to policy makers (Peng et al., 2002).

Finally, as Heller points out (2003), a basic measurement challenge is presented by oft-changing eligibility criteria for financial aid awards from federal sources and other sources. Many studies regarding the effects that loans have on student enrollment behaviors analyzed cohorts of students in college before 1992, at which time the federal lending program greatly expanded because of changes in loan limits and eligibility criteria brought about by the reauthorization of the Higher Education Act (Heller, 2003).

Emerging Statistical Strategies and Developments

To address the statistical issues discussed above, financial aid researchers have sought out new analytical techniques. Several strategies are being employed to address the limitations of prior studies. Two-stage regression modeling (Heckman, 1979; Lee, 1983) first estimates a student's likelihood of making a type of decision and then incorporates that estimate into the likelihood of applying to college, enrolling, and persisting (DesJardins et al., 2006; Singell, 2002a, 2002b, 2002c; Titus, forthcoming). However, in a review of recent articles in the econometric literature, Titus (forthcoming) argued that these types of models face problems of misestimation because of the correlation of the estimated effects with unobserved factors not captured in the model. In addition, two-stage models can be difficult to implement because, to meet their statistical assumptions, one has to include a variable in the first stage of the model that predicts the likelihood that a case is included in the population of interest (e.g., financial aid applicants) and is uncorrelated with the outcome of ultimate interest (e.g., bachelor's degree completion). Variables with these characteristics are not often found in available data. Therefore, greater emphasis is being placed on other quasi-experimental regression techniques and on randomized experimental designs (Feuer, Towne, & Shavelson, 2002; What Works Clearinghouse, 2006).

One quasi-experimental strategy (so called because students volunteer for participation in programs rather than be randomly assigned) exploits the ways in which financial aid eligibility criteria can create relatively large differences in the amounts of aid awarded to students with similar characteristics (Bettinger, 2004; Dynarski, 2002b, 2004; Linsenmeier et al., 2001). These discontinuities create

quasi, or natural, experiments about the effects of aid on students' college-going behaviors because the aid is either awarded or not awarded at the margins, or cut-off points, of eligibility thresholds based on small differences in students' academic qualifications and financial need (Rossi, Lipsey, & Freeman, 2004). Changes in financial aid eligibility criteria from one year to the next create similar opportunities for study (see, e.g., Dynarski, 2002b; Linsenmeier et al., 2001) because student groups do not change dramatically from one year to the next and the differences that do exist can be statistically controlled and identified by matching students with similar characteristics (Rossi et al., 2004).

Originally and primarily utilized in the natural and biological sciences, propensity score matching is another quasi-experimental technique attracting attention in social science and evaluation fields (Bryson, Dorsett, & Purdon, 2002; Guo, Barth, & Gibbons, 2004; Sianesi, 2001). As applied in the social sciences, propensity score matching essentially mimics an experimental design with randomized assignment of students to educational treatment conditions, by identifying cases in survey or administrative data that were subject to a treatment condition and comparing their outcomes to matched cases in the data.

The difference between propensity score matching and typical matching procedures is that the former estimates the effect of participation and nonparticipation in the treatment condition as well as the counterfactual effect of participation among those who did not participate in the treatment and the counterfactual effect of nonparticipation among those who did. This estimation strategy yields the average treatment effect (similar to the mean effect of a regression analysis) as well as the average treatment on the treated and the average treatment on the untreated. This approach is designed to yield a rich set of results for policy makers who are engaging in cost-benefit analyses, because such decisions should be informed not only by observable effects of participation but by the opportunity costs of participation. Titus (forthcoming), in a study not of financial aid but of economic returns to master's degree completion, illustrated the way that propensity score matching can be applied in higher education research to counter problems of self-selection bias and so recommended its use in future financial aid research.

Quasi-experimental designs can also involve the treatment and observation of groups of students with similar and dissimilar academic and demographic characteristics. For instance, Avery and Kane (2004) provided information and mentoring sessions about financial aid, college costs, and application procedures to students in low-performing Boston schools, in a program entitled COACH (College Opportunity and Career Help). They subsequently compared the college-going behaviors of students who had received the extra advising with a matched sample of students attending suburban schools that typically sent high proportions of their graduates to college. Their findings show that although students in the COACH program, who were mentored by Harvard graduate students, reported aspirations for college enrollment equal to that of their suburban counterparts, over 25% of those with high grades and more than half with low grades completed the SAT but did not apply to college. In part, the authors noted these results can be attributed to concerns about college financing, particularly because the students overestimated public college tuition charges, assessing them at 2 to 3 times the cost of colleges in their area. However, this conclusion is somewhat undermined by results from the same analysis showing little correlation between

students' accurate perception of tuition at a college and their assessment of their ability to pay to attend that college.

St. John and Chung (2005) exploited ambiguities in the first year of the review process for participation in the Gates Millennium Scholars program—specifically, ambiguities that created a quasi-random distribution for the 2000 academic year. Students in the award recipient and nonrecipient groups exceeded cognitive and noncognitive selection criteria, thereby creating comparison groups with only random differences in their traits. The awards cover students' financial need after other forms of grant and scholarship aid have been awarded. As last-dollar grants, they are intended to eliminate the need for students to borrow and work extensive hours to pay college costs. Comparing recipient and nonrecipient groups, St. John and Chung concluded that the award recipients are more likely to enroll in private rather than public colleges, to enroll in the 4-year rather than the 2-year sector, and to maintain continuous enrollment, thus providing evidence of a positive effect of last-dollar grant aid that offsets the need to borrow.

Although true experiments with random assignment of students to treatment and control groups are considered the gold standard for evaluating program effects and avoiding self-selection bias (Rossi et al., 2004), there are few examples of this type of research in the study of financial aid and higher education in general, primarily because of the logistical, ethical, and methodological challenges of conducting true experiments in educational settings (Chatterji, 2005; Feuer et al., 2002; Raudenbush, 2005). However, one example of an educational experiment is provided by the Opening Doors project, conducted by MDRC (Brock & Richburg-Hayes, 2006). Although the Opening Doors study, which randomly assigned students to receive additional grant aid and academic counseling, did not directly study the effects of loans on student behaviors, the design and implementation of the project demonstrate the feasibility of conducting financial aid experiments. As such, researchers are increasingly turning their attention to considering the potential value and appropriate design of experimental studies (St. John, 2004).

This literature review illustrates the ways that weaknesses in statistical estimation and causal modeling have hampered research estimating the effect of loans on student college enrollment behaviors. Financial aid researchers are tackling these problems by adopting a broader range of statistical strategies, such as quasi experiments involving the treatment of students who receive additional financial aid benefits and counseling (in comparison to a peer control group) and natural experiments created by discontinuities in aid criteria. Titus (forthcoming) has urged for the adoption of propensity score matching for financial aid research, and no doubt this technique will soon be added to the quasi-experimental toolbox.

Sociocultural and Psychological Research on Borrowing

The Intersubjectivity of College and Financial Aid Counseling

The most recent educational scholarship on the effect of loans and other forms of financial aid on students' college-going choices argues for integrated approaches that recognize the interrelatedness of a student's financial circumstances, academic experiences, perception of one's likelihood to complete a program, work and family demands, self-concept, and social support from significant others in one's family and community (Beekhoven et al., 2002; Cabrera, Nora, &

Castaneda, 1993; Callender & Jackson, 2005; DesJardins et al., 2006; Metcalf, 2005; Nora, 2001–2002; St. John, 2003; St. John et al., 2000; Trent et al., 2006). All these factors influence a student's sense of belonging (Hurtado & Carter, 1997) in the college environment and so determine their willingness to enroll in and continue college.

Case studies of the sociocultural aspects of college choice indicate that learning and acting on financial aid knowledge presents a complex challenge for low-income and first-generation college students. In *The Price of Admission*, Kane (1999) described the difficulties of complicated financial aid application processes and their negative impact on those who most need financial assistance. His work is borne out by the long list of aid simplification proposals issued by the Advisory Committee on Student Financial Aid (2005). A recent analysis by the American Council on Education of federal data for the academic year 2003–2004 estimated that 1.5 million students who had not completed the Free Application for Federal Student Aid might have been eligible for federal Pell Grants had they applied (King, 2006). This finding raises the question why students essentially leave money on the table for which they are eligible, and it underscores the challenges that students face in accessing aid of all kinds.

The results of recent case study research demonstrate that knowledge of the availability of financial aid is not enough in itself to help students obtain aid (Luna De La Rosa, 2006). Students' perceptions of themselves as potential college-goers matter (Archer & Hutchings, 2000; Tierney & Venegas, 2006), as do counselors' views of their charges' college potential (McDonough & Calderone, 2006). Knowledge is acquired in particular social and cultural contexts that shape its meaning and the capacity of students to act on it.

One finding from this emerging literature indicates that the provision of financial aid information is necessary but insufficient to provide access to low-income and racial- and ethnic-minority students who are facing economic and cultural barriers to college enrollment. In a study of high school students' Internet use in low-income urban high schools, Venegas (2006) found that although extensive Web access to admissions and financial aid information was once expected to equalize access to college, students who are able to obtain aid information are still likely to flounder without the guidance of a trusted and knowledgeable advisor. Despite abundant information on the Web at government, institutional, and private scholarship sites, guidance from a knowledgeable counselor emerges as a key and essential resource for students to navigate complicated forms and deadlines. For example, although students knew that completing the Free Application for Federal Student Aid was a necessary first step to getting aid, many lacked broader knowledge of the admissions and financial aid context to navigate the entire process, thus resulting in missteps and missed deadlines.

McDonough and Calderone (2006) explored the sociocultural understandings of money by considering how class status influences consumer choices, including decisions about going to and paying for college (see also Archer & Hutchings, 2000). Their study examined the counseling relationship between low-income students and middle- and upper-class counselors. Through interviews and focus groups with guidance counselors in secondary schools, the researchers assessed counselors' knowledge of financial aid, as well as their perceptions of their students' financial needs and college affordability concerns.

In addition to finding sizable variation in the ways in which the public, private, and Catholic schools in their sample of Southern California high schools conveyed financial aid knowledge to students, McDonough and Calderone (2006) observed counselors' assumptions about their students' collegiate aspirations and potential based on family wealth and ethnic group membership. The authors concluded that the counselors, most of whom were working in schools where more than half the students were Latino and African American, "did not have big college dreams for their students" (p. 1712). Counselors perceived that students and their families did not understand the types of available aid and could not necessarily distinguish grants from loans. The counselors believed that those students and families who recognized loans as a form of aid tended to "equate loans with 'huge' and often insurmountable debt" (p. 1714).

McDonough and Calderone (2006) found evidence that the counselors' preconceptions of their students' characteristics influenced their advising such that students from poor families were steered toward community colleges as the most affordable option for higher education. Counselors at private schools, however, provided an exception. Because low-income students and their families had received aid to attend private high schools, their counselors were predisposed to assume that those families would be willing to seek aid again to attend expensive colleges.

A study by Linnehan, Weer, and Stonely (2006) regarding results of a survey of high school guidance counselors conducted by the National Commission of Cooperative Education tested the hypothesis that students' racial and ethnic characteristics influence the advice that they receive. The results of the study indicate the existence of "a three-way interaction between student race, socioeconomic class and academic performance with counselor recommendations" (p. 20) to attend a particular type of college. The responding guidance counselors indicated that they would be more likely to advise middle-class Black students with low academic performance to attend a community college than they would their White peers with similar characteristics.

Although these two recent studies provide exceptions, the impact of students' racial and ethnic characteristics on the quality of financial aid advice they receive has not been studied extensively. Interactions between racial/ethnic characteristics and quality of counseling have, however, been studied in regard to their negative impact on minority students. For example, González et al. (2003) conducted life history interviews of students classified as English-language learners, limiting their interviews to students who were successful in earning bachelor's degrees and thereby controlling for students' true prospects of success. The respondents believed that they were directed away from college preparatory classes and into remedial education because of the fact that they were Spanish speakers. The students' experiences underscore the powerful influence that teachers and counselors' perceptions of students' ability play in delaying the development of collegiate aspirations.

Similarly, a study using life history analysis of African American and Latino community college students who successfully transferred to highly selective 4-year colleges demonstrated the important role that counselors and instructors can play in raising students' aspirations and enabling them to "cross the border" between the two different cultures of the open access 2-year college and elite colleges (Pak et al., 2006). The fact that these key advising relationships were haphazard rather than institutionalized in formal counseling roles revealed them as being even more

critical to the developmental process whereby low-income community college students came to believe that they could succeed at an elite institution.

These studies indicate that the provision and receipt of financial aid information is an intersubjective exchange (Taylor, 1982). Counselors tailor advice on the basis of their knowledge of and assumptions about students. Students seek out and act on advice on the basis of their own self-concept and their perceptions of the counselor (Alexitch, 2006). Although these interactions are not well understood, a review of the literature regarding help-seeking behaviors among college students by Alexitch (2006) suggests that these behaviors are influenced by students' cultural background, gender, and age. Alexitch highlights a number of considerations. Minority students who have been subjected to negative stereotypes may feel academically inferior and thus avoid seeking help (i.e., to not appear weak). White students and females in general have more positive attitudes toward seeking help, whereas Black males have the most negative view. Among men, receiving assistance is at times a threat to self-esteem because the act of seeking help is viewed as an indicator of lack of ability. In addition, sharing cultural similarities with a counselor appears to hold greater importance for females than for males. Alexitch concluded that "students' perceptions of the academic environment, and the roles within it, can affect their help-seeking behaviors" (p. 184).

These perceptions are likely to be influenced by multiple socioeconomic and cultural factors. Descriptive results from a series of surveys conducted by the Tomás Rivera Policy Institute over the past several years demonstrate the shortcomings of controlling for variation in the willingness of students and their families to borrow for college on the sole basis of racial/ethnic indicator variables. Based on prior research (Baker & Velez, 1996; Nora & Horvath, 1989; Olivas, 1985, 1986), there is a general sense in the literature that students of different racial and ethnic groups vary in their willingness to borrow (McDonough, 2004; Perna, 2004). Whereas the results of the surveys, which were conducted in urban areas nationwide and in California, indicate that Latinos are the most risk averse, the extent to which low rates of borrowing stem from cultural values, information barriers, immigrant status, and economic circumstances still needs to be disentangled.

Information barriers are also certainly evident. The survey results indicate that it is quite common for Latino parents and young adults to have low levels of general college knowledge, to lack access to college information in Spanish (Tornatzky et al., 2002), and to be unfamiliar with the college student aid system and the costs of higher education (Zarate & Pachon, 2006)—this despite nearly unanimous agreement among respondents about the importance of obtaining a college degree. When the results are disaggregated by income status, immigrant generation, and national origin, the findings illustrate the dangers of treating Latinos as a monolithic group in regard to college knowledge and willingness to borrow. More affluent and third-generation respondents had much greater familiarity with higher education in the United States and with types of aid than did first-generation respondents. The knowledge gap was quite sizable between those Latino national groups most familiar with aid (Dominicans, with 71% somewhat familiar and very familiar) and least familiar with aid (Mexicans, at 55%).

Similarly, research conducted by Caliber Associates (2003) for the ECMC Group Foundation demonstrates the importance of distinguishing economic and U.S. nativity status from racial/ethnic indicators. Their multivariate analysis of

Survey and Income Program Participation and National Postsecondary Student Aid Study data indicated that racial and ethnic variables are not significant predictors of borrowing for college once control variables are included measuring parental education, income, immigrant status, and use of debt (mortgage) for home financing. White students who are U.S. natives are most likely to borrow for college, but with the exception of Hispanic nonnatives, estimates across racial and ethnic groups are statistically insignificant independent of socioeconomic characteristics. Trent et al. (2006), studying undergraduate students of color, also found no statistically significant differences among racial and ethnic groups toward incurring debt for graduate and professional school.

In other words, members of U.S. racial- and ethnic-minority groups with socioeconomic status enabling them to participate in formal credit systems use debt in ways similar to those of White college students. However, the generally lower socioeconomic and more recent immigrant status of Latinos results in lower rates of college enrollment and borrowing to finance college costs (Caliber Associates, 2003). Patterns of risk aversion, willingness to borrow, and loan default are attitudes and behaviors located in economic contexts and histories of access (or lack of access) to formal credit systems (Caliber Associates, 2003). For example, among all racial and ethnic groups, having a home mortgage is a strong positive predictor of college enrollment and borrowing for college. However, White students native to the United States are about 1.5 times more likely than native Hispanics and Blacks to hold a mortgage or own their home outright (Caliber Associates, 2003).

Research also informs understanding of racial and ethnic differences in loan default rates. Volkwein, Szelest, Cabrera, and Napierski-Prancl (1998) found that whereas Black and Hispanic borrowers default on their student loans at much higher rates than do Whites and Asians, these differences are not statistically significant once controls are entered into the predictive model for earned degrees, marital status, and family size. Among the racial and ethnic groups studied, the key predictors of loan default are identical—failure to complete a degree; having dependent children; and being single, widowed, or divorced—but the magnitude of effects are amplified among minority groups. Earning a degree also matters more to loan repayment among all groups than does the amount borrowed or the type of sector or institution attended.

The significance of these findings is not that racial/ethnic background does not matter in the study of college loans and indebtedness—it does. Low-income African Americans and Latinos have been disproportionately affected by the increasing importance of loans in the financial aid system, as demonstrated by their lower rates of degree completion (Gladieux & Perna, 2005), substantially higher loan default rates (Volkwein et al., 1998), and greater debt burden (Price, 2004). The findings are significant because they indicate that differences in attitudes toward debt and actual borrowing behaviors are not due to amorphous cultural values but to socioeconomic influences, such as parental education, family income, and immigrant generation.

Irrespective of racial and ethnic characteristics, the rates at which students borrow and the typical amount borrowed differ substantially by institutional type, with students in the relatively low-cost community college sector borrowing the least and those in the 4-year private college borrowing the most (College Board, 2006). Latino students are clustered in community colleges, where it is most feasible to

earn degrees without borrowing, but analyses of National Postsecondary Student Aid Study data, as presented in *How Latino Students Pay for College* (Santiago & Cunningham, 2005), demonstrate that Latinos who enroll in 4-year colleges borrow at the same rate as other students do. For example, more than half the students of Mexican/Chicano ancestry are enrolled in community colleges; few borrow (6.6% in 2003–2004); and the average amount borrowed is the lowest of any sector (\$3,294). In contrast, among the 20% of such students enrolled in the public 4-year sector, nearly half took loans and borrowed higher amounts (averaging \$5,272). They also received over twice the amount of annual grant aid as did their counterparts in the 2-year sector (\$4,500 versus \$2,114). At private nonprofit 4-year colleges, an even greater percentage of such students borrow (66%) and at higher levels (\$6,800 annually). These students also receive annual grant aid (\$7,600) exceeding their levels of debt. If loans provide the extra funds necessary to enroll in the 4-year sector, then borrowing leverages students' receipt of higher levels of public subsidies in the form of grant aid.

These figures illustrate that Mexican/Chicano students who are enrolled in different institutional sectors face different aid options and quite different financing strategies. In general, it is not clear whether students who are willing to borrow gain the capacity (by that initial willingness) to enroll in 4-year colleges or whether those who enter 4-year colleges become willing to borrow to meet their college costs. However, these descriptive comparisons illustrate a finance gulf between the world of students in community colleges and that of students in other sectors where borrowing is the norm. Enrollment choices determine the amount of public benefit that students receive, with students in 4-year colleges receiving greater benefits through grant aid and tuition subsidies (provided by taxpayers in the public sector and donors in the private sector). Borrowing gives students access to additional public subsidies in the form of grants and the higher levels of educational resources found in the 4-year colleges.

The low rates of bachelor degree completion among Latinos (Fry, 2002) cannot be addressed without enrolling more Latinos in the 4-year sector. Even if states devote greater funding to higher education to reduce tuition charges, increasing the number of Latino baccalaureates will require increased rates of borrowing among lower-income and more recent immigrant Latino students. There is a danger in attributing differences in college borrowing among racial and ethnic groups to deeply seated and immutable cultural values because there are clear associations, if not clear causal relationships, among borrowing, college choice, and college quality that indicate that a lack of willingness to borrow limits postsecondary opportunities.

Psychosocial Dimensions of College Debt

Although psychological constructs such as academic self-efficacy and motivation have been employed to study college student behaviors (Alexitch, 2006; Robbins et al., 2004), they have rarely been applied to the study of students' responses to college debt. Financial aid researchers have studied attitudes toward and satisfaction with financial aid (Nora et al., 2006), as well as the importance that students place on receiving aid (Hu & Hossler, 2000), but there has been relatively little use of validated psychological scales to study the central role of loans in higher education finance. An exception is provided by Callender and Jackson (2005).

Two studies that examined internal and external locus of control as predictors of borrowing demonstrate the complexity of modeling the causal effects of loans

on educational outcomes (Robbins et al., 2004; Trent et al., 2006). Both studies used Rotter's Locus of Control Scale and obtained descriptive statistics indicating that the tendency to place responsibility for life events on external factors rather than on one's own efforts are associated with positive attitudes toward college debt. This finding suggests that borrowing for higher education is a leap of faith that things will work out in terms of eventually finding a job and making enough money to repay one's loans.

However, once controls for highest degree expectations, self-concept, and other factors are included in the multivariate analysis of the Trent and colleagues' study (2006) of undergraduates in a research mentoring program, the locus of control scores are not significant determinants of willingness to borrow. Similarly, controlling for income, religion, attitudes toward debt, expenditures, and credit card use, Davies and Lea (1995) found that locus of control is not a significant predictor of borrowing among university students in the United Kingdom, contrary to findings from studies of debt in other populations. This result may be attributed to the fact that an external locus of control is negatively correlated with income (Davies & Lea, 1995)—in other words, high-income students are more likely to feel as though they have control of their futures—and that the sample of relatively affluent university students whom they studied had a truncated income distribution. Davies and Lea concluded that Rotter's Locus of Control Scale warranted further study in relation to college debt, given its significant association with attitudes toward borrowing.

Furthermore, Davies and Lea (1995) noted that their findings are influenced by "two distinct processes linking income and debt, corresponding to two distinct routes into debt" (p. 676; see also, Metcalf, 2005). Low-income students are driven into debt by need, whereas affluent students can borrow at relatively high levels and so view their debt as being temporary. High levels of family support also contribute to debt tolerance (Trent et al., 2006), reflecting the value of a financial cushion. It appears that income differences are not significant in multivariate analyses of college students' borrowing because once students form high educational aspirations, the income effects are mitigated by expectations of degree completion and future earnings. The expectation of earning a professional degree is a strong predictor of debt tolerance in the Trent et al. study (2006), with the odds that a student would be willing to borrow increasing by about 8 to 1. The expectation of earning a graduate degree is not significant, thereby reflecting differences in the earnings potential of the two types of degrees.

Having higher levels of debt is positively correlated with more tolerant attitudes towards debt (Davies & Lea, 1995), a finding that is not surprising if we assume that those with higher debt tolerance borrow more.

However, utilizing a pseudo-longitudinal design, Davies and Lea (1995) found that increasing tolerance for debt follows from the necessity and capacity to borrow. They concluded that borrowing behaviors influence the development of debt tolerance. The English university students had easy access to credit through bank overdrafts. When students faced the need for additional cash and had the capacity to borrow, they did so. Consequently, student mean debt took a large jump in the cohort's second year, even though students' attitudes toward debt changed little at that point. It was not until the third year, following another increase in debt levels, that students' pro-debt attitudes took a correspondingly large increase.

Although the generalizeability of these findings is limited by the specialized sample under study, Davies and Lea's study (1995) contributes to the conclusion that borrowing is a learned behavior influenced by actions, opportunities, and future prospects. This view suggests that the risk aversion ascribed in a generalized manner to the Latino population is due to a confluence of cultural and economic factors, including poor access to formal credit systems for nonnatives and low-income families in the United States (Caliber Associates, 2003) and in their native countries, such as Mexico, where mortgages and consumer credit loans generally became available to lower- and lower-middle-class families in the 1990s (Castañeda, 2006). Exclusion from formal credit and consumer purchase systems also contributes to disparities in knowledge about lending practices in those systems and to misinformation about eligibility criteria for college loans (Caliber Associates, 2003). This is not to say that cultural values do not matter at all. For example, Davies and Lea found that non-Christians were less likely to borrow than Christians in their U.K. sample, which would have included Muslims whose religious beliefs hold against borrowing. Instead, these studies illustrate that borrowing behaviors are strongly influenced by economic conditions and access to credit.

Sociocultural perspectives on financial aid policy expand understanding of the nature of information barriers to college. Emerging case study research and a small number of studies incorporating psychological constructs increase attention to the cultural and sociopsychological contexts in which students grapple with the intricacies of financial aid information, college subsidies, and potential returns to educational investments.

As Robbins et al. (2004) pointed out, "the relative strength of the educational literature is to create comprehensive theories of college adjustment . . . but it is limited by atheoretical constructs and single-item survey measurement" (p. 262); in contrast, the psychological literature, which has experienced a "resurging interest in motivation theories," contains "theoretically rich constructs with adequate internal and external validity" (p. 263) relevant to the study of college students' success. Noting the burgeoning theoretical interest in motivational theories in the field of psychology, the researchers categorize these as focusing on motives as drives, motives as goals, and motives as expectancies and concepts of self-worth. They note that the theories of Tinto (1975, 1987) and Bean and Metzner (1985), which have guided so much of higher education research on student outcomes, include the psychosocial concepts of sense of commitment, social belonging, and self-concept. These educational constructs are similar to others in psychology, such as academic goal and achievement motivation, as well as the need to belong.

Yet the more nuanced psychological literature offers finer tools for analysis related to the study of borrowing attitudes and behaviors, including well-developed motivational expectancy theories and notions of self-efficacy rooted in social learning theory. With their meta-analysis and synthesis of research in the two fields, Robbins et al. (2004) recommended investigating the relevance of "core self-evaluation traits (self-esteem, generalized self-efficacy, locus of control, and emotional stability)" (p. 277), which have been developed in studies of job performance and satisfaction, to the study of academic self-efficacy. Both Trent et al. (2006) and Davies and Lea (1995) noted the limitations of Rotter's Locus of Control Scale in their studies. Development of motivational and self-evaluation measures specific to college students and college-going choices is warranted and

can be informed by recent theoretical developments in the field of psychology (Robbins et al., 2004).

Owing to limitations of the available number and validity of studies, Robbins et al. (2004) were unable to test for racial and ethnic differences and interaction effects in the significance of these various psychological constructs to predict college outcomes. However, research demonstrates that the effects of historical and ongoing discrimination create differences in the ways that White students and students of color are likely to assess their educational and career prospects (Archer & Hutchings, 2000; Trent et al., 2006). Trent et al. (2006) observed that having an internal locus of control is generally viewed as a positive characteristic, but “the issue is more complex for students of color” (p. 1742):

In the United States, where there is a known history of race-based discrimination that has operated at times with the support of legal authority and that continues to differentiate life chances along racial lines, attributing ones’ life chances to reasons other than personal responsibility might be understandable if not embraced. How one’s understanding of her or his life chances shapes and orients important attitudes is not well understood. (p. 1740)

Trent et al. (2006) emphasized that one’s understanding of one’s life chances is conditioned on past and current discriminatory practices and so “influences a student’s investment of time, energy, and other resources.” This is particularly true because students of color are more likely to suffer high debt burdens, attributed to relatively low earnings (Price, 2004) or failure to complete a college degree (Gladieux & Perna, 2005). As a consequence, students of color who are forward-looking and have a strong sense of personal responsibility may fail to invest in higher education or place too great an emphasis on self-reliance while pursuing higher education.

These studies indicate there are qualitative differences in the meaning of debt. As Archer and Hutchings (2000) observed, “young people from working class backgrounds . . . constructed higher education as inherently risky, demanding great investments and costs, and yielding uncertain returns” (p. 569). The official discourse of higher education investments being safe and profitable is not a matter of common sense but a socially constructed value of dominant groups in privileged economic positions. Perceptions of risks and rewards are influenced by family and personal wealth, experience with formal lending systems, and perceptions of discrimination.

Recognizing that collegiate aspirations and the meaning of money are socially constructed (McDonough & Calderone, 2006) and influenced by the expectations, attitudes, and behaviors of those around us brings attention to the ways that counselors can unconsciously make assumptions about the appropriateness of various college financing options, based on their impressions of the affluence, national origin, age, and race/ethnicity of their students. Cohen, Raudenbush, and Ball (2003) have argued that educational resources are not self-acting. By this, they mean that increasing resources such as financial aid will not necessarily increase student outcomes, because teachers and counselors must use those resources in interaction with students. Certainly, many students realize that financial aid is available and so take advantage of it without interacting with school and college personnel. Most often, these are students with educated parents and siblings who help them form their educational aspirations and choose their path to a bachelor’s degree and beyond.

First-generation college students and others from families with few financial resources are less likely to realize that financial aid is “for them.” Teachers and counselors must therefore act as institutional agents (Stanton-Salazar, 1997), as advocates for students, and so actively help them negotiate bureaucracies and understand cultural norms of academia (McDonough & Calderone, 2006; Pak et al., 2006) and the risks and benefits of borrowing for college.

College and financial aid counseling requires judgment and a practice of care (Polkinghorne, 2004). Practitioners’ attitudes and beliefs about their students’ college dreams, aspirations, and prospects are socially constructed. Therefore, studies of practice and practitioners’ knowledge in the area of financial aid advising should be conducted with the aim of understanding the knowledge, beliefs, attitudes, values, and resources that practitioners require to provide sound advice to those in their charge. The use of practitioner-as-researcher methods (Bensimon, Polkinghorne, Bauman, & Vallejo, 2004) would enable practitioners to self-reflectively gain knowledge about the costs and benefits of various financial aid options and the way that these are perceived by students in a variety of life situations.

Conclusion

I do not mean to suggest that concepts like the ego and the id, or social norms, are without any scientific content. Only that they are tempting materials, as are concepts in the economic literature, for ad hoc and useless explanations of behavior. (Becker, 1976, p. 13)

When Nobel laureate Gary Becker wrote those words, he was arguing for the superiority of economics, rooted in the assumptions of rational choice and human capital theory, over psychology and sociology for the purpose of conducting rigorous explanatory research. Becker’s views (1996) came to dominate social science (Bourdieu, 1986; Slaughter, 1991), and the idea that human capital is the cornerstone of economic development (Goldin, 2003; Quiggin, 1999; Schultz, 1961) fueled expansion of American colleges in the 1960s and 1970s (Hansen & Stampen, 1981). Therefore, it is not surprising that the tenets of economic thinking and rational choice pervade higher education policy and research perspectives. Financial aid research in particular, relying heavily on econometric and statistical analyses, has tended to have an explicit or implicit rational choice framework. Decision making about higher education participation is typically treated as a linear process of cost–benefit analysis that starts with the decision to enroll (or not) in college, that continues with reenrollment, and that culminates with graduation and career choice.

Students’ perceptions of college opportunities and financial aid have affective dimensions. Rational choice theory initially assumed perfect information, and perhaps for that reason researchers have been slow to consider how, when, and where financial aid information has an impact on students’ choices. Yet sociocultural studies of aid and college admissions demonstrate that providing information to students is not the same as making it meaningful. College aspirations are socially constructed (Archer & Hutchings, 2000; McDonough, 2004; McDonough & Calderone, 2006), which means that students’ expectations of themselves, their senses of fit in academic environments, the ways that they see their futures are all molded by the ways that their parents, teachers, advisors, and peers see and interact with them. These insights from an emerging case-study literature cast a shadow on the feasibility of

modeling the effect of loans (or financial aid information in general) on college choices as a direct causal treatment. An individual's capacity to receive and act on pertinent information and opportunities depends on psychological states such as self-efficacy, control, self-worth, and goal motivation (Robbins et al., 2004), which are in turn influenced by a range of factors present to varying degrees in students' home, educational, and social environments. The dynamic interactions that are spurring the adoption of new quasi-experimental and experimental techniques in statistical research are revealed in even more complex forms through the ethnographic and sociopsychological research on aid and counseling.

The need for an expanded research agenda focused on student motivations, aspirations, and expectations is indicated because simply providing information to students about financial aid is likely insufficient for many students to motivate them to seek out optimal levels of financial aid and to raise aspirations. The development and ongoing expression of a sense of academic self-efficacy may be an essential intermediate condition for a student to receive and act on financial aid information. Higher education policy makers and researchers will benefit from a richer conception of decision making that incorporates sociocultural and psychological constructs into the economic view of individual agents engaged in rational decision making.

Statistical estimates have been confounded by dynamic interactions between factors thought of as predictors of collegiate enrollment decisions (e.g., grants, loans) and the characteristics of students who seek out such aid. Similarly, emerging case study research demonstrates the highly intersubjective nature of relationships that inform educational aspirations, college choices, and receptivity to financial aid options. Such dynamic interactions are a shared research dilemma among statistical and interpretive researchers. The further use of ethnographic methods to study students and counselors—broadly defined to be inclusive of faculty and administrators in a variety of roles—can generate rich descriptions of the effect of loans and the prospects of indebtedness on structuring and limiting college access, but such methods are not designed to influence the ways that students and counselors interact. A normative social science engaging high school and college practitioners in examining their roles and responsibilities as student advisors is needed to complement the positive social science focused on estimating the effects of loans and other forms of aid on college choices.

Notes

An earlier version of this article was presented at the annual meeting of the Association for the Study of Higher Education, November 2006. Portions of the text appeared as a commissioned working paper prepared by the New England Resource Center for Higher Education for the Institute for College Access and Success's Project on Student Debt, issued November 2006 and titled *A Research Agenda for the Study of Student Indebtedness and College Enrollment*. I am grateful for insightful comments received from reviewers on earlier drafts: Lauren Asher, Sandy Baum, Estela Mara Bensimon, Thomas Brock, Rong Chen, Alisa Frederico Cunningham, Bradley Curs, Stephen DesJardins, Shouping Hu, Patricia McDonough, Laura Perna, Kenneth Redd, Edward St. John, John Saltmarsh, William Tierney, Marvin Titus, Kristan Venegas, and Estela Zarate. Despite this valuable feedback, the views expressed in this article and any errors are my own.

1. Policy and nonprofit higher educational organizations have played an important role in providing descriptive and multivariate statistical analyses of student debt and borrowing trends. Policy reports that analyze national databases and provide complete information about data collection and sampling are included in this review, along with peer-reviewed journal articles and conference papers.

2. The actual value depends on interest rates and thus varies over time.

3. See St. John (2003), particularly Table 6.2, for an in-depth summary.

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