What Higher Education Has to Say About the Transition to College

SARA GOLDRICK-RAB

University of Wisconsin-Madison

with

DEBORAH FAYE CARTER
RACHELLE WINKLE WAGNER

University of Michigan

Background*: Higher education researchers have much to say about the transition to college. This field focuses primarily on inequities in college participation and completion, the relative importance of high school preparation, and the utility of financial aid in promoting enrollment. This literature's strongest conceptual emphasis is on theoretical models of student retention. Less is known about other facets of the transition to college, including different postsecondary pathways and college outcomes.*

Purpose*: This paper describes the major findings of research on the transition to college contributed by higher education, and how further research might be improved. The specific areas covered are college preparation, college access, persistence, and college outcomes. The reviewed literature covered extant research on the transition to college as conducted by higher education researchers.*

Research Design*: This essay is an analysis of extant research on the college transition in the field of higher education*

Conclusions/Recommendations*: This review highlights the field's major shortcoming as undertaking insufficiently rigorous, empirical testing of theories on the transition to college. Existing research on postsecondary pathways is often compromised by data or methodological limitations, failure to be critical in attributing causality, and not differentiating effects occurring at different measurement levels (i.e., individual vs. institution).*

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OVERVIEW

What does higher education research have to say about the transition to college? Not surprisingly, quite a bit. This broad, interdisciplinary field is concerned with multiple facets of the transition and thus reviewing the major findings is an enormous task. This paper examines extant research on the transition to college as conducted by higher education researchers (including those in schools of education and those within and from disciplinary departments and backgrounds), and published in higher education journals, monographs, and books. By design, research undertaken by this same group of researchers, but published in disciplinary or policy journals, is largely set aside.[1] The purpose of the review is thus to identify specific contributions made by higher education researchers to our understanding of the transition to college, and also to make note of gaps in the literature that merit further attention.

Higher education research on the transition to postsecondary education is dominated by two specific foci: college entry and college completion.[2] The first body of literature is primarily concerned with examining inequities in college participation, and addresses questions regarding the relative importance of ascriptive characteristics, high school preparation, and financial aid in predicting enrollment. The second area of research focuses on correlates of student persistence to the bachelor's degree, with a strong emphasis on theories of student retention.

Less often discussed in the higher education literature are the other facets of the transition to college, including (but not limited to): preparation for college; postsecondary pathways; and college outcomes. The first area, which represents a point of intersection between K-12 and higher education, is perhaps somewhat neglected for that very reason-in other words, the traditional "silos" between the two fields within schools of education has resulted in relatively little research on the pathways leading to college. The role of postsecondary attendance patterns-what occurs in the "black box" between college entry and exit-is understudied partly due to a lack of conceptual clarity regarding what constitutes a college pathway, and until recently a lack of detailed data that might be used to examine these pathways. The dominant area in that body of research examines the mission and outcomes of the American community college. Finally, examinations of the returns to college are scarce in the higher education literature, particularly with regard to non-economic outcomes.

Higher education researchers have extensively examined the transition to college, yet significant theoretical and methodological deficiencies within that literature mean that there is still much to be learned. Over the last forty years, the field has been dominated by concepts drawn,

often uncritically, from psychology and sociology. While there has been some movement, especially during the last two decades, towards a more critical approach that raises questions about race, gender, and class inequalities, such an approach has not become normative. Moreover, other relevant disciplines (e.g., economics, political science, anthropology) that might contribute both new ways of thinking about the transition to college, as well as rigorous methodologies for examining it, are underutilized. However, recent efforts to integrate quantitative and qualitative methods in order to address issues of both causality and process are laudable.

Throughout this article, specific areas in need of additional research are identified, and critical questions about both theory and method are raised. The review is constructed in such a way as to follow a student's life-course experience-we begin with the preparation for college, followed by college entry, postsecondary pathways, moving on to college completion, and finally to the rewards of college attendance.

PREPARATION FOR COLLEGE

Research on the role that preparation plays in promoting the transition to college has focused on identifying the relative contributions of academic, social, and financial factors. Tracking in high school, academic coursework, and social preparation are particularly strong predictors of both college entry and subsequent performance (Nora & Rendon, 1990b; St. John, 1991; Thomas, 1998). Using high school transcripts from the High School and Beyond (HS&B) survey, Cliff Adelman identified a "toolbox" of high school courses considered crucial in preparing a student for postsecondary participation, including those in math, science, and foreign language (Adelman, 1999). Those whose high school curricula include advanced levels of these courses tended to perform better in college, net of high school grades or standardized test scores (Adelman, 1999). Students who study higher levels of mathematics in high school are also disproportionately likely to enter a doctoral degree-granting institution (Adelman, Daniel, Berkovitz, & Owings, 2003). In addition to academic preparation, financial preparation has been identified as a key predictor of college attendance (Hossler & Vesper, 1993; St. John, 1991). Overall, a large body of research has demonstrated that better high school preparation leads to greater levels of access to the postsecondary system-students with higher levels of preparation are more likely to enter four-year institutions rather than two-year, and to start college immediately after high school rather than delay enrollment.

Inequities in academic and social preparation

Understanding the importance of good high school preparation, much of the contemporary literature is devoted to identifying specific differences in the high school experiences of students who are less apt to attend college (Cabrera & La Nasa, 2000a, 2000b; Hurtado, Inkelas Kurotsuchi, Briggs, & Rhee, 1997; Jun & Tierney, 1999). Disadvantaged and minority high school students are more likely to receive secondary schooling in vocational rather than academic tracks (Gamoran, Porter, Smithson, & White, 1997; Thomas, 1998), take fewer math and science courses (Nora & Rendon, 1990a), and attend smaller schools lacking precollege preparation programs and counseling (Bryk, Lee & Smith, 1990). Importantly, some have questioned whether these factors may be more essential for the college outcomes of some groups of students than others. In one such study, Alberto Cabrera and his colleagues examined the pathway to college for socioeconomically disadvantaged students, using data from High School and Beyond, and found that the effect of academic preparation on the odds of bachelor's degree completion is stronger for those students than for more advantaged students. He determined that students from poor social origins are deterred from even considering college attendance by as early as the eighth grade (Cabrera, Burkum, & La Nasa, 2003; Cabrera & La Nasa, 2000a, 2000b, 2001).

Low-income parents and students are less likely to receive high quality information about financial aid opportunities, and as a result are less likely to file a federal application for student aid or apply to more expensive colleges (which may, in fact, offer them a better financial aid package) (Flint, 1993, 1997; Olson & Rosenfeld, 1984). Upper-income students receive information about college from a variety of sources, while low-income students rely on their high school counselors, largely because their parents and siblings did not attend college (Cabrera & La Nasa, 2000a, 2000b). Don Heller has hypothesized that middle-school students, lacking knowledge about financial aid, may be deterred by perceived college costs and thus fail to academically prepare themselves for college while in high school-diminishing their postsecondary opportunities substantially (Glenn, 2004). His "cost discouragement" hypothesis has not been tested due to a lack of data on students' cost anxieties (Glenn, 2004). There is the suggestion in the literature, however, that low-income and first generation students, who are more price-sensitive to tuition increases and fluctuations in financial aid (Heller, 1997), would also benefit from earlier notification of financial aid eligibility-during the eleventh grade versus twelfth grade, for example.

In the last ten years, higher education researchers have begun to con-

ceptualize and attribute differences in academic, social, and financial preparation to differences in cultural and social capital (drawing on the work of sociological theorists James Coleman and Pierre Bourdieu) (Braxton, 2000; McDonough, 1997; Perna, 2000; Walpole, 2003). Much of that work is theoretically well-informed, but in some cases the concepts are overextended to include myriad measures, and a result it remains unclear just how much of the social class variation in college preparation is due to differences in forms of capital.

How preparation shapes student aspirations

Imperfect knowledge about financial aid and inadequate academic preparation is not always reflected in students' aspirations to earn a college degree (Carter, 1999; McDonough, 1997; Perna & Swail, 2001). Indeed, nearly all high school students (90 percent) indicate that they expect to attend college, even if their career choice does not require it (Schneider & Stevenson, 1999). A mismatch between information and expectations may result in what Barbara Schneider and David Stevenson (1999) termed "the ambition paradox"- students with high ambitions for a bachelor's degree choosing to begin college at a two-year school, where they are unlikely to ever earn such a degree. We still need to know much more about the formation of degree expectations, particularly among community college students (especially with regard to the timing and sequencing of events such as degree choice, college choice, and the decision to persist). Some have argued that this misalignment of ambitions complicates the transition from high school to college, and that educational policies and practices should be revised to better educate students about college choices (McDonough, 1994; Rosenbaum & Person, 2003; Schneider & Stevenson, 1999).

Programs and policies designed to bridge the gap

Many higher education researchers advocate for providing early college opportunities to disadvantaged students (Fitzsimmons, 1999; Perna & Swail, 2001; Tierney & Jun, 2001). One example, dual enrollment programs, are designed to move students more seamlessly from high school to college by allowing students to earn college credit while still in high school (Bailey, Hughes, & Karp, No Year). However, there has been little rigorous assessment of dual enrollment programs with appropriate controls.

Another widespread program is Upward Bound, a TRIO program that serves low-income students by providing additional academic instruction,

academic and financial counseling, tutoring and mentoring, and a variety of other services. This program has been found to increase both the college enrollment and completion rates of low-income students. Twice as many participants enroll in college, and four times as many finish, compared to non-participants (Council for Opportunity in Education, 2001; Kezar, 2001).

Others argue that dual enrollment programs and AP programs are insufficient, offering only a decontextualized entry to college. One program that combines the high school and college experience is the Early College High School, funded in part by the Gates Foundation (http://www.earlycolleges.org). Each school is a collaborative between a public-school district and an institution of higher education. The schools are located in communities with populations underrepresented in postsecondary education, including low-income, minority, and first-generation college students. One characteristic of these schools is that they are small, with no more than 75-100 students per grade. Students leave with sufficient college credit to enter a four-year university as a sophomore or junior. By changing the nature of high school and compressing the number of years spent in higher education, proponents argue that states and districts can increase high school and college graduation rates, save dollars for families and taxpayers, and better prepare students for entry into higher education and the workforce. Outside evaluations of these new high schools will be essential for determining their overall impact.

In response to concerns about stagnating rates of college participation, particularly among low-income and minority groups, higher education researchers have recently begun to discuss the concept of P-16, which involves the alignment of K-12 and higher education systems in order to smooth the transition to college (Hodgkinson, 1999; Kirst & Venezia, 2001; Kirst, 1998; Milton, Schmidtlein, Mintrop, MacLellan, & Pitre, 2000). There is a disjuncture between K-12 standards and assessments, college placement exams, and the academic requirements of higher education and the workforce. As a result, students have difficulty understanding and making sense of the varying expectations of the different systems. This especially impacts college attendance and completion by low-income and minority students. Currently, colleges and universities have little incentive to collaborate with K-12 schools. As noted in the final report of Stanford University's Bridge Project (Venezia, Kirst, & Antonio, 2003), there are few levers that cross sectors-such as K-16 accountability systems or shared funding streams-which encourage the postsecondary system to change its practices.

COLLEGE ACCESS

Despite several persistent barriers to high school completion and college entry, participation rates in the American higher education system are at an all-time high. Women, minorities, and individuals from low-income backgrounds are enrolling in colleges at higher rates than previously seen, altering the profile of the "American undergraduate," and diminishing the meaning of the label "nontraditional student" (Baker & Velez, 1996). Whereas most college students in the 1970s were White men, more than half of today's undergraduates are women, one-fourth are non-White, and one-fourth are from below the 40th socioeconomic percentile (Adelman et al., 2003; Anderson, 2003).

Defining access

As more students enter higher education, some have begun to question the meaning of "access" in our broadly differentiated system. Is access to a four-year bachelor's degree-granting institution a "higher" or "better" form of access than the opportunity to enroll in a community college? Is delayed access to a four-year school (which is sometimes offered to students in systems with limited capacity) sufficient? Are students enrolled part-time or in multiple institutions enjoying the same quality collegiate experience as students engaged in more traditional forms of enrollment?

Defining and assessing the quality of college access and enrollment is especially difficult for higher education researchers concerned about new forms of postsecondary attendance. For example, in the NELS postsecondary transcript data set, there are "likely" postsecondary participants and "known" postsecondary participants. The former group indicated that they went to college, but actual evidence of that participation (i.e., in the form of a college transcript, or as a record in the National Student Loan Data System) was not always produced, or the student only took one college course, or attempted fewer than five credits. The latter group's participation was fully verifiable with transcripts received from their institutions. Slightly more low-SES students were defined as "likely" rather than "known" participants (Adelman et al., 2003). These difficulties are both methodological and conceptual, resulting from new forms of multi-institutional attendance and intersectoral movement. For example, one has to now consider whether "dual enrollment" or "distance learning" constitutes true college attendance. In addition, given that some students are delaying college entry beyond a few years past high school graduation, or re-entering the system at later dates, it is increas-

ingly important to observe those students at least into their 30s to determine when and if college enrollment occurs.

Demographic disparities in enrollment rates

Demographic differences in rates of college entry are of particular concern to higher education researchers. There are persistent racial and socioeconomic gaps in college enrollment. Asian students enroll in college at higher rates than other racial and ethnic groups. Among NELS eighth graders, nearly all Asian students (95%) entered college, compared to 77 percent of White and Black students, 70 percent of Hispanics, and 66 percent of American Indians (Ingels, Curtin, Kaufman, Alt, & Chen, 2002). Students from the lowest SES quartile who finish high school are nearly five times as likely as high SES students to *not* enroll in college; as a result, only 15 percent of first-time freshmen are from low-income backgrounds (Terenzini, Cabrera, & Bernal, 2001).

The persistent relationship between race and access to higher education is the subject of a great deal of research (Cabrera & La Nasa, 2000a, 2000b; Cross & Slater, 2002; Nettles & Millett, 2000; Nettles, Millett, & Einarson, 2001; Perna, 2000; Stewart, 1988). There has also been a surge of interest in Latino students, and their disproportionate entry into two-year colleges (Cabrera & La Nasa, 2000a, 2000b; Ganderton & Santos, 1995; Nora & Horvath, 1990; Perna, 2000; Rendon & Nora, 1987; Vazquez & Garcia Vasquez, 1998). Additionally, there is some concern with gender differences in college entry. Women are enrolling in colleges at higher rates than men, and attaining more bachelor's degrees (Ingels et al., 2002). Men are more likely than women to start at a two-year college (Adelman et al., 2003; Beattie, 2002; Bischoping & Bell, 1998; Jacobs, 1999; Leslie & Oaxaca, 1998), and are less likely to persist until completion (Ingels et al., 2002).

Research has also delved into issues of socioeconomic stratification in where students start college. There is a great deal of inequality with regard to college destination, even after differences in academic ability are taken into account (Alon, 2001; Astin & Oseguera, 2004; Hearn, 1988, 1988, 1991; Karen, 1991; McDonough, 1997; Paulsen, 1990). The majority of this "college choice" literature examines differences in two- versus four-year attendance, while fewer studies examine other distinctions within four-year institutions (i.e., selectivity, control). One study by Sigal Alon (2001) examined both type of college destination (2 vs. 4-year) and selectivity, using HS&B and NELS data. She found a direct, persistent effect of social class on where one attends college, particularly

with regard to highly selective colleges. Students from upper SES backgrounds were twice as likely as students from middle SES backgrounds to attend a four-year, rather than a two-year college, and the odds were nine times larger that they attended highly selective schools. James Hearn (1988) has also demonstrated that high-SES students are more likely to attend elite colleges, while low-SES students are more likely to attend less-selective schools, even after academic factors are taken into account. And Alexander Astin and Leticia Oseguera (2004), utilizing data from the Cooperative Institutional Research Program's annual entering Freshmen Survey, recently confirmed that there was little change in the representation of low-income students in selective colleges from the 1970s to the 1990s. These findings indicate an increasingly competitive admissions process in the new "marketplace" of higher education that further disadvantages already disadvantaged students. Students respond differently to the opportunity structure presented by the American system of higher education depending, in part, on their social class background (McDonough, 1997). While the ideal model of a free market assumes that individuals have all of the necessary information in order to make rational choices, and complete access to that information, in fact, many only have partial information. Put differently, all "adolescent econometricians" are not created equal (Beattie, 2002). Additional research is needed to better understand the specific ways in which the expanding higher education market affects the choices of different groups of students.

Access and affordability

Some researchers contend that affordability is one significant reason why a disproportionate number of low-income and minority students do not attend college or do not complete a college degree once enrolled (Heller, 2001; Mumper, 1993; Perna, 2002).[3] Trends in financial aid toward providing less need-based aid (and more merit-based aid), and putting more money into loans rather than grants have worsened the chances that college students from low-income families will enter college or complete a degree (Orfield, 1992; Perna, 1998; Perna, 2002; St. John, 1990; St. John & Asker, 2003). On average, unmet financial need for low-income students ranges from $3,000-$6,000, often a prohibitive amount given that low-income students are disproportionately adverse to taking out loans (Advisory Committee on Student Financial Assistance, 2001; St. John, 1990). There is also evidence that initial college choice influences ultimate persistence, and that financial aid plays a role in that process. For example, students receiving financial aid are more likely to attend

college at private, four-year, small institutions, which on average have higher degree completion rates (St. John, 1990).

In the past, one route to college access for the poorest students was through the welfare system. Under Aid to Families with Dependent Children (AFDC), some welfare recipients received free tuition and child care so that they might attend college. Following the passage of the 1996 Personal Responsibility Work Opportunity and Reconciliation Act (PRWORA), there were significant declines in the number of recipients allowed access to college, due to the Act's overarching "work first" philosophy (Shaw & Rab, 2003; Shaw, Goldrick-Rab, Mazzeo, & Jacobs, 2006). There is some evidence that the 1996 legislation most severely restricted college access for Latino and limited English proficiency adults (Goldrick-Rab & Shaw, 2005). Thus, the lowest-income citizens are attending college, including community college, at lower rates than ever before-and those that do attend are increasingly reliant on financial aid.

Efforts to promote access (other than financial aid)

But higher education researchers have concluded that economic need is not the only barrier to college for low-income students (Cabrera et al., 2003; Hossler, Braxton, & Coopersmith, 1989). The families of low-income students tend to have less experience with college, and thus are less likely to encourage their children to be involved in school functions, and to know how to plan and prepare them for college (Cabrera & La Nasa, 2000a, 2000b; Flint, 1992). These students are also more likely to come from poor and minority communities, and attend schools with fewer resources, under-prepared teachers, and a lack of college-prep coursework (Orfield, 1992; Orfield & Eaton, 1996; Terenzini et al., 2001).

Some have therefore tried to promote college access for these disadvantaged students facing multiple barriers to college entry through policies and programs that give them some assistance in gaining admission. One of these policies, affirmative action, has been notably controversial. In the past ten years, a handful of researchers have conducted empirical inquiries into the effects of affirmative action. The most notable work in this area was conducted by two former Ivy League College presidents (Bowen & Bok, 1998), who examined the academic achievement of Black and White students attending more than two-dozen elite institutions. While the authors could not specifically identify which Black students were admitted under affirmative action, their evidence did not indicate that Black students suffered (socially or academically) relative to White students as a result of admission to selective schools; moreover, they iden-

tified benefits to both individuals and institutions as a result of the policy. One question inadequately addressed by extant research on affirmative action regards the quality of the adjustment process for minority students. There is some evidence that African-American high school students are intimidated by perceived cultural differences between colleges and their high schools, and worry about adjustment to a predominantly White college environment (Freeman, 1997). It is remains unclear precisely *how* and to *what end* these "awareness" obstacles are overcome or reconciled when Black (and Latino) students arrive on college campuses (Cabrera, Nora, Terenzini, Pascarella, & Hagedorn, 1999; Eimers & Pike, 1997; Hurtado, Carter & Spuler, 1996).

Another program that provides a wider entry point into college for disadvantaged students is open admissions. The most prominent open admissions experiment took place in the 1970s when the City University of New York opened its doors to all New York City high school graduates who passed the bare minimum of academic standards. David Lavin and his colleagues have written three books evaluating this experiment, and are currently working on a third using data from a 30-year follow-up study of a sample of original participants (Attewell & Lavin 2007; Lavin, Alba, & Silberstein, 1981; Lavin & Hyllegard, 1996). Their findings indicate that open admissions benefited all students admitted, not only poor minorities, and that overall, the positive effects of college-going crossed generations.

POSTSECONDARY PATHWAYS

The pathway through college is a complex one, beginning with initial entry, and followed by a series of transitions which can include inter-institutional movement, stopout, and changes in enrollment intensity.

The First-Year Experience

Attention to the experiences of freshmen, or "first-years," examines factors thought to contribute to the social integration of these new students, including participation in seminars, learning communities, and service-learning (Gardner, 2001).

For many students, particularly those in community colleges, the first year is characterized by participation in remedial education (Shaw, 1997). Of 1992 high school seniors who entered college, two in five took at least one remedial course. Of those students, one in ten took four or more such courses. Students who took remedial coursework had poorer academic preparation, disproportionately started school at a two-year or

sub-baccalaureate institution, and were less likely to complete a bachelor's degree by age 26/27 (Adelman et al., 2003). There is a significant body of literature on remediation, including a great deal of program evaluation, but there is more testing to be done in order to determine what makes for a successful remedial program (Dougherty, 2002).

Forms of student persistence: Attendance patterns

Pathways to college completion are becoming increasingly complex. Students who follow the traditional route to a bachelor's degree are now in the minority, by one estimate comprising only one-fourth of the undergraduate population (Choy, 2002).[4] Twenty-seven percent of NELS students who attended college took some time off after entering, 39 percent attended part-time, and 31 percent changed their major at least once (Ingels et al., 2002). In addition, students are moving in, out, and among colleges and universities at higher rates than ever before. Between the 1970s and 1990s, there was a significant shift in the number of schools undergraduates attended, from one to three or more schools, rather than from one to two (Adelman, 1999; Adelman et al., 2003), yet until the mid-1990s, higher education research paid relatively little attention to student movement across postsecondary institutions, largely because of a lack of national longitudinal transcript data. Cliff Adelman and his colleagues (2003) note that among 1972 high school seniors, 51 percent attended more than one institution; among 1982 high school seniors that percentage was 53; and among 1992 high school seniors, 57 percent attended at least two institutions. Notably, within that latter group, nearly one in five students attended more than two schools.

While the most recognized form is the upward transfer from a two-year to a four-year school, today's multi-institutional attendance patterns do not always involve a permanent transfer-of 1982 high school graduates who attended two schools, 60 percent eventually returned to their first institution (McCormick, 2003). Thus, transfer is but one form of multi-institutional attendance. Adelman et al. (2003) and McCormick (2003) have identified nearly a dozen different educational pathways involving multi-institutional attendance. These pathways range from "excursions," where attendance at the second or third institution is temporary and includes only a small number of credits, to "migration," which involves a permanent transition from one school to another, across sectors. In some cases, students alternate attendance between multiple institutions (known as fragmentation, discovery, or rebounding), while in others, they attend schools in sequence (called serial transfer). Some observers of higher education have noted these new forms of transfer and have

termed such movement the "transfer swirl" (de los Santos & Wright, 1990; Townsend & Dever, 1999).

The majority of research on transfer examines the characteristics of students who move from a community college to a four-year institution. An analysis of two-year to four-year college transfer among students in the National Longitudinal Study of 1972 revealed that low-SES students were significantly less likely to transfer than were high-SES students, even after controlling for race and high school background (Velez & Javalgi, 1987). Valerie Lee and Kenneth Frank (1990), using 1980s HS&B data, found similar results-both lower social class and minority status reduced a student's odds of two- to four-year transfer. Importantly, the demographic backgrounds of "transfer students" vary in part based on the definition of transfer-the more narrow the population of interest (i.e., including only those students who transferred after taking 30 credits at a community college instead of including all community college students who indicated a desire to earn a bachelor's degree), the higher the socioeconomic background composition of that group (Bradburn, Hurst, & Peng, 2001).

One unique type of multi-institutional attendance involving transfer is movement from a four-year college to a two-year institution, known as "reverse transfer." A special issue of *New Directions in Community Colleges* was devoted to a discussion of reverse transfer students in 1999 because of a growing awareness of their presence on two-year college campuses. Indeed, "it appears that the presence of [reverse transfer students] nationwide has ranged from over 9 percent to 16 percent since the late 1960s, with the most recent data indicating that they constitute about 13 percent of students at two-year colleges" (Townsend & Dever, 1999). The very few existing studies on reverse transfer students are usually limited to single institutions, due to the small number of these students found in national datasets. In addition, all known studies lack multivariate analyses predicting reverse transfer using student characteristics. One statewide study of reverse transfer students in Kentucky found that the majority of those students moved to a community college because they wanted to earn an associate's degree, and others required improvement of their basic skills (Winter, Harris, & Ziegler, 2001).

Some students change institutions more than once. One study that used institutional data to examine multiple-transfer students found that these students were from high socioeconomic backgrounds, had high degree ambitions, and good academic preparation (Kearney, Townsend, & Kearney, 1995). They tended to move from expensive private institutions to larger, less expensive institutions. However, there was substantial selection bias in this study, since the sample was drawn from a single institution-in other words, all of these students eventually transferred to a

large urban public university.

An analysis of the NELS postsecondary transcript data found that pathways of multi-institutional attendance vary, depending in part on a student's socioeconomic background. Students who begin at a four-year institution and later move to other schools and stopout from school are disproportionately likely to come from low SES backgrounds, tend to make their initial move to a two-year school, and are highly unlikely to obtain a bachelor's degree within eight years of high school graduation. On the other hand, high-SES students have a greater tendency to move among schools fluidly, without taking time off, and do not experience the same "penalty" on degree completion from this attendance pattern that low-SES students incur. This suggests that new postsecondary pathways may represent subtle forms of tracking in higher education, even among students who obtain access initially to a four-year institution (Goldrick-Rab, 2006).

How institutions shape student pathways

The types of schools students attend affect how they experience college. Higher education researchers interested in this relationship most often examine the American community college.[5] As growing numbers of Americans seek a postsecondary education and college tuition prices . skyrocket, the community college remains the single most affordable and accessible option for disadvantaged individuals. Today there are over 1,170 community colleges in the United States serving 10.4 million students, including 45 percent of all first-time freshmen. The community college population is disproportionately female (58%), and serves more minority students than any other postsecondary institution, including 46 percent of Black undergraduates and 55 percent of Hispanic undergraduates (Philippe, 2000). Sixty percent of low-income freshmen begin their undergraduate careers at community colleges and in 1992, 22 percent of students from the lowest-income quartile enrolled in community colleges. Over one-third of community college students qualify for and receive some form of financial aid-two-thirds of those students receive federal assistance; less than one-third receive assistance from the state, even though the average annual tuition is a low $1,518, because for the lowest-income families that tuition represents 12 percent of their annual income (Philippe, 2000). Community college tuition remains the most affordable postsecondary option, however, as it amounts to less than half of the tuition at public four-year colleges and one-tenth that at independent four-years (AACC website). For the lowest-income families, tuition at public four-year schools equals 25 percent of their average annual

income. The price of attending community college has not outpaced family income at the same rate as other colleges.

But some have questioned whether the community college truly democratizes access to college, or whether it acts as a diversion, derailing the plans of students intending to earn a bachelor's degree. This debate, which has taken place over the last thirty years, and is well-documented in books such as *The Diverted Dream* (Brint & Karabel, 1989) and *The Contradictory College* (Dougherty, 1994), has ebbed and flowed. Critics of the community college argue that the institution diverts ambitious lower-class students away from four-year schools, "cooling out" their ambitions and channeling them into lower-status vocational occupations (Brint & Karabel, 1989; Dougherty, 1987, 1992; Nora, 1993). Indeed, empirical findings support some of these claims. For instance, research clearly demonstrates that the traditional transfer function of the community college, to provide a bridge from the two- to four-year school, has declined, despite evidence that community college students are more likely than ever to aspire to a bachelor's degree (Schneider & Stevenson, 1999). Compared to the late 1960s, when the majority of community college students transferred to four-year institutions (Dougherty, 1994), in recent years the percentage of students who transfer has been declining, with estimates varying from about 20-40 percent ever transferring (Grubb, 1991). Overall, community college students earn fewer bachelor's degrees, persist for fewer years, and end up in less lucrative jobs than do comparable students who begin their education at four-year institutions (Grubb, 1997; Kane & Rouse, 1995).

Several state-level and institutional-level factors (insufficient transfer policies; lack of financial aid), as well as individual-level factors (poorer social and academic preparation) help to explain some of the differences between two- and four-year school outcomes (Dougherty, 1994). Recent comparisons between community colleges and two-year for-profit institutions suggest that community colleges might do much more to connect their students with jobs by providing them with networks, connections, and counseling (Deil-Amen & Rosenbaum, 2003).

In response to the critics, some advocates argue that the access community colleges provide to the postsecondary system is in some ways more important than the outcomes of that access. In other words, the democratizing effect of the open-door admissions policy on individual's long-term life chances may outweigh any shorter-term negative consequences on bachelor's degree attainment (Rhoads & Valadez, 1996). The returns to an associate's degree, and one or two semesters of community college, are still more substantial than the returns to a high school diploma (Kane & Rouse, 1995). Lavin & Hyllegard (1996) report that the open-admis-

sions experiment at CUNY in the 1970s, which greatly widened access to New York's two- and four-year colleges, not only led to an increase in the number of minorities in New York City who received educational credentials and jobs, but these attainments "helped to ensure more advantaged prospects for the children of many former students. Open admissions helped to raise the odds that the advantages to its immediate beneficiaries would be transmitted across generations," even for those individuals who did not complete a degree (1996: 198). But the overall consensus of higher education researchers is that while community colleges open doors for students unlikely to attend college, those students once they enter are unlikely to complete a degree.

Mission diversification at the community colleges has diffused the conflict somewhat, introducing new roles for the colleges in meeting the needs of students and citizens. Today the trend is towards a comprehensive mission which includes: a varied curriculum blending vocational and academic programs; short-term, certificate-oriented training programs; and an increasingly entrepreneurial approach towards education and training (Bragg, 2001; Dougherty & Bakia, 1999; Kisker, 2003). As a result, it is increasingly more difficult to criticize the community college for a lack of "success"-its goals are many and varied, and the transfer mission is but one of them. At the same time, some researchers are questioning whether and how we might better advise high school students about their options and chances for completion at two-year institutions (Schneider & Stevenson, 1999). Others are examining the role that states might play in promoting transfer through improved articulation agreements (Fitzsimmons, 1999; Ignash & Townsend, 2001). Clearly, the debate over the role of the community college in the American higher education system is far from over, and its resolution may affect the ways in which poor and minority students transition from high school to college.

COLLEGE COMPLETION

There is a long research tradition in higher education focused on persistence issues, including whether and how a person remains enrolled in an institution long enough to obtain a degree. This is primarily motivated by concern with the consistently high rates of non-completion in America's system of higher education since at least the 1930s, when attrition research began. However, there are several aspects in which this enormous body of literature (which includes entire journals and special issues devoted to the study of college completion) is limited, including: a focus on traditional students attending four-year institutions; a lack of atten-

tion paid to institutional factors promoting retention; and a limited literature containing many methodological flaws in the assessment of higher education institutional "effects."

Defining completion

Higher education has moved in recent years towards reporting multiple measures of college completion-including measures of institutional, system-wide, and state-level completion. This is due to the growing recognition that increasingly students complete degrees at schools other than the one they start at, and thus institutional measures of completion significantly understate rates of completion (Adelman, 1999). For example, among those students who began college at a four-year institution in 1995-1996, 51 percent completed a bachelor's degree within six years at that institution. But when the measure of persistence is broadened to include completion at *any* four-year institution, the rate of finishing was 58 percent (Berkner, 2002). Thus while institutional completion rates (within six years) for four-year schools range from less than 10 percent to 100 percent (with nearly 20 percent graduating less than one-third of their freshmen within six years), one-fifth of all bachelor's degree recipients in the class of 1992 who began at a four-year college or university received their degree from an institution other than the one they began at (Adelman, 2004).

We are also beginning to move away from the influence of institutional models of completion, which label college departure as "dropout." Identifying a student as a dropout is an inappropriate label for a woman taking time off from school to raise her children, intending to return later in life, or for a student who returns to work for several years in order to raise needed tuition. This term, as Bruce Eckland (1964) noted, also leads to an inaccurate assessment of the relationship between ascriptive characteristics and educational attainment. As early as 1964, he found evidence that certain non-ability factors (parent's income, religion, and home-town community) had the opposite relationship to college departure that they had to college return-in other words, students from lower family incomes were more likely to stopout from college, but among those who left college, students from higher family incomes were more likely to remain out (i.e., to be dropouts, rather than stopouts) (Eckland, 1964). The ability to discover such a relationship is dependent on a multi-institutional approach to college completion. The creation of several national longitudinal schooling surveys by the National Center for Education Statistics has enabled such analyses. However, one consequence of using a system perspective and following students across

schools is that defining true "dropouts" becomes difficult. Categorizing "dropouts" is an especially challenging task when using longitudinal data that only follows students until a certain time, at which point we lose track of those students and their academic records entirely.

Completion rates also vary depending on how the researcher defines the group of students eligible for completion. For example, Cliff Adelman frequently includes credit thresholds in calculating bachelor's degree completion rates. Among all of the NELS students who likely participated in higher education, 45 percent earned a BA (by age 26 or 27); among those who earned more than ten credits, 51 percent earned a BA; and of those who earned more than ten credits and attended a four-year college at any point, 67 percent earned a BA (Adelman et al., 2003). These various definitions of completion have real consequences for those trying to assess the extent to which students from different backgrounds complete the final transition to a degree. For example, 11 percent of NELS postsecondary participants earned ten or fewer college credits; among those students, low-SES and minority individuals were overrepresented relative to more advantaged groups. These groups would thus be disproportionately excluded from the denominator in some calculations of retention rates.

Demographic disparities in completion rates

As noted earlier, approximately 45 percent of 1992 high school seniors completed a bachelor's degree within eight years of graduation. This overall completion rate included 49 percent of White students and 51 percent of Asian students, compared to barely 30 percent of Blacks and less than 25 percent of Hispanics (Adelman et al., 2003). Higher education research has consistently identified significant variation in college completion rates by race. On average, Black and Hispanic students are more likely than White and Asian students to depart college prior to earning a degree (Allen, 1992; Cabrera et al., 2003; Ganderton & Santos, 1995; Hatch & Mommsen, 1984; Myers, 2003; Nora, Kraemer, & Itzen, 1997; Thomas, 1992). This is true at both two and four-year institutions. In addition, Blacks and Hispanics are disproportionately likely to earn an associate's, rather than bachelor's degree (Adelman et al., 2003). Black college students "underperform relative to their White and Asian counterparts, earning lower grades, progressing at a slower pace, and dropping out at higher rates" (Massey, Charles, Lundy, & Fischer, 2003). Douglass Massey and his colleagues, using data from the National Longitudinal Survey of Freshman (consisting of students from 28 selective institutions), found that Black academic underachievement in the

first year of college is largely due to both socioeconomic disadvantage and racial segregation. This is consistent with the work of Allen, Epps, & Haniff (1991) and others who have found that Blacks enter college with numerous educational disadvantages.

Racial differences in college completion rates have received more attention than socioeconomic differences in completion-even though the latter differences are consistently larger and more persistent in multivariate models (Hearn, 1991). The system of American higher education has been socioeconomically stratified throughout its history. Class inequalities in college completion widened in the 1980s, as graduation rates among the top-income quartile increased nearly 50 percent, while the rates for the middle two quartiles improved only slightly, and completion among students from the lowest-income quartile declined (Mortenson, 1995). Today, socioeconomic differences in college completion are substantially larger than differences in high school completion. Within the same group of 1992 high school seniors noted above, 62 percent of students from the highest SES quintile finished a bachelor's degree by age 26/27, compared to barely 17 percent of students from families in the lowest SES quintile (Adelman et al., 2003).

More of the mean difference between Blacks and Whites in college completion is attributable to differences in high school preparation; much less of the socioeconomic variation in completion is explained by these factors (Adelman, 1999; Baker & Velez, 1996; Cabrera et al., 2003; Terenzini et al., 2001). Indeed, research has found that a student's socioeconomic background is a significant predictor of both the type of college she enrolls in, and her odds of completion (Terenzini et al., 2001). Numerous researchers have found that this effect persists even after taking measures of academic ability into account (Adelman, 1999; Astin, 1993; Bowen & Bok, 1998; Cabrera et al., 2003). Social class both directly impacts college graduation, and indirectly affects it through college plans and attendance. Students with greater economic need spend more time working and less time studying, which may affect their attendance patterns (Walpole, 2003). This is an expectation of most financial aid packages, which anticipate that students will work to defray college costs. Students with less money are also more likely to depart college because of family financial difficulties (Bowen & Bok, 1998). This strong positive relationship between class and persistence means "students from high-SES families can look forward to more positive outcomes in college, regardless of their abilities, academic preparation, or other characteristics" (Astin, 1993).

Whether women are a disadvantaged group in higher education is a subject of much debate. Women's educational attainment reached parity

with men's over the last twenty-five years, and much of the gender segregation among college majors subsided (Jacobs, 1999). In fact, the college "freshman" population is now 60 percent female (Riordan, 2003). Yet women's educational careers are more often interrupted by marriage and/or childbirth. The surest route to degree completion, similar to the most successful paths to tenure or partnership, remains uninterrupted momentum, a model based more on a man's life course than a woman's. In addition, women who do poorly in college appear to be more likely than their male counterparts to voluntarily withdraw (Tinto, 1993). Clearly, women's disproportionately high entry rate to college, and their higher degree completion rate, may conceal challenges they face during their educational trajectories.

It is worth mentioning that higher education researchers have noted an increase in the length of time it takes for today's college students to earn degrees, which may be related to some of these demographic disparities in completion. The average time-to-bachelor's degree is 4.7 years (up from 4.5 years in 1972). This is related in part to the number of credits students are earning, which has increased from 129 to 135 credits (6 credits is equivalent to one-half of one semester).[6] However, more students are also enrolled part-time which may also contribute to the increased time-to-degree. Part-time students are less likely to attain a bachelor's degree and more likely to leave college without earning any degree at all (Choy, 2002).

Theories of student persistence

Researchers have examined several aspects of the postsecondary experience in an effort to identify the factors most successful in retaining students who enter college until degree completion. Indeed, the higher education literature is replete with theories about ways to improve student retention. The dominant theory, developed by Vincent Tinto, emphasizes the importance of academic and social integration in promoting student persistence. Differences in levels of integration are posited to correspond to differences in completion rates. Tinto theorizes that individuals deeply involved in society (in this case a college) are less likely to depart from that society. Thus, Tinto's model is essentially a socialization model that focuses on individual adjustment to the college environment (Tinto, 1993) and it has in many ways been foundational in the development of theories of college retention.

But Tinto's model, while useful in identifying the factors that contribute to institutional attachment, has been critiqued for failing to take into account potentially different transition processes for minorities

(Nora, 1987; Nora & Rendon, 1990a; Tierney, 1992; Tierney, 1999), older and/or community college students (Ashar & Skenes, 1993; Bean & Metzner, 1985; Fox, 1986), and for not accommodating factors external to the institution (Braxton, 2000) and those related to individual psychological processes (Braxton, 2000). As a result, a number of articles have appeared since the first edition of *Leaving College* was published, elaborating, expanding, and improving Tinto's model-notably, some have been written by Tinto himself (Braxton, 2000).

The experience of minorities in higher education is thought to differ from the experience of majority students-and these different experiences are said to account for some of the racial variation in degree completion rates. Some researchers have attempted to improve on Tinto's model by identifying factors specific to minority student retention (Hurtado, Milems, Clayton-Pederson, & Allen, 1998). At least one critique has been made of the assumption underlying Tinto's model that effective integration involves rituals of transition into the college culture. William Tierney (1992) argues that ". . .rituals of transition have never been conceptualized as movements from one culture to another" (p. 611). He claims that the model makes assumptions regarding individuals undergoing a rite of passage in a culture that might or might not be their own (e.g., minority students within White institutions). He notes that "models of integration have the effect of merely inserting minorities into a dominant cultural frame of reference that is transmitted within dominant cultural forms, leaving invisible cultural hierarchies intact" (p. 611). Indeed, there is evidence that minority students in White institutions are confronted with embedded hierarchies that complicate their experiences. African-American students in particular experience exclusion, racial discrimination, and alienation on predominantly White campuses (Allen, 1992). One study identified student role strains, life event stresses, and minority status stresses that potentially impact a student's successful psychological and academic adjustment to college (Smedley, Myers, & Harrell, 1993). The researchers concluded that the "more debilitating minority status stressors were those that undermined students' academic confidence and ability to bond to the university" (p.448) and that these stresses derived from internal sources, as well as from the social climate and composition of the institution. In contrast, there is some evidence that at historically Black colleges and universities (HBCUs) African-Americans "emphasize feelings of engagement, connection, acceptance, and. . . encouragement" (Allen, 1992, p. 39).

Some higher education researchers have conceptualized racial and class differences in completion as the product of persistent inequalities in educational pathways across several stages or transitions. The

expanded college-choice persistence model frames college persistence as a longitudinal process linking factors that predispose students to select a college with factors influencing college persistence (Cabrera et al., 2003). Alberto Cabrera and his colleagues have employed this model in examining low-income and Latino students, and as stated earlier, they concluded that these students are often derailed from the college track as early as their middle school years (Cabrera et al., 2003). Gary Orfield (1998) posits that racial differences in college completion stem from higher dropout rates in high school, a lack of rigorous pre-college preparation, the concentration of minority students into community colleges, low rates of transfer between two-year and four-year institutions, and financial aid problems (specifically need-oriented aid). These theories point toward a need for interventions earlier in the life course.

Students that are nontraditional in other respects (other than race), such as older students and those with children, may also experience college differently than "traditional" students (Ashar & Skenes, 1993). The focus of both Tinto's work and that of Ernest Pascarella and Patrick Terenzini (2005), who reviewed numerous studies on retention in *How College Affects Students,* is on the traditional-aged residential student attending a four-year institution. John Bean and Barbara Metzner (1985) recognized this concern and developed a model explicitly for nontraditional students, which emphasizes more factors external to the institution, given that adult students spend less time on campus. The emphasis in their model is on "goal commitment" and whether a student has the "intent to leave." More recently, some research has examined differences between traditional college students and adult learners, paying particular attention to variation in residence, work, family life, participation in the college's social life, and participation in the surrounding community (Terenzini et al., 2001). These studies also consider the differences in learning needs and goals for adult learners as opposed to traditionally aged students, and the findings suggest that an alternative model of adult learners needs further consideration.

Financial constraints also play a role in student retention. A growing body of work empirically examines specific financial aid mechanisms (Cabrera & et al., 1990; DesJardins, Ahlburg, & McCall, 2002). There is some evidence that need-based grants, rather than loans, are more successful in promoting persistence, but the evidence is mixed (Heller, 2002; Murdock, 1987; Perna, 1998). Overall, there is compelling evidence that a student's ability to pay for college directly affects his or her persistence while in college (Cabrera & et al., 1990; St. John, Andrieu, Oescher, & Starkey, 1994; St. John & Starkey, 1994). The financial nexus model, developed by Michael Paulsen and Edward St. John (2002), attempts to

link college choice and persistence with financial background and need. This model asserts that students' perceptions of college costs, and the actual dollar amount of costs and aid may affect persistence decisions. First, there are sequences (or transitions) within educational trajectories that are shaped by family background, and these transitions (i.e., from high school to college, from college entrance to degree completion) are explicitly linked to policies affecting those sequences. Second, social groups differentiate postsecondary pathways, and thus group comparisons are merited. And finally, students move through college within broader contexts, including the system of higher education, which shape and constrain their trajectories. According to this theory, early college events impact later decisions-for example, beginning college at a less-expensive or less-selective institution may have later impacts on persistence decisions (Paulsen & St. John, 1997).

Policies and practices promoting completion

Based on Tinto's model, many higher education researchers have studied and advocated for programs promoting academic and social integration in college (including student advising, counseling, tutoring, basic skills development, freshman orientation, faculty involvement, study skills courses, test-taking clinics, career advising, residence halls, and learning communities) thought to produce positive student outcomes. However, the amount of research empirically testing and documenting the effects of these policies on student persistence is small relative to the sheer dominance of Tinto's theory in the literature (in part because finding data to test the effects of these programs on large numbers of students, while controlling for other observable factors affecting achievement, is difficult). Exceptions include studies by Cabrera (Cabrera, Nora, & Castañeda, 1993), Pascarella and Terenzini (Pascarella & Terenzini, 2005), and Braxton (Braxton, Sullivan, & Johnson, 1997) that derive testable propositions from the model, and generally found positive effects of academic and social integration on four-year college students. But the ability of researchers to test these theoretical constructs is limited by the degree to which the variables they use accurately assess the phenomenon of interest (e.g., few surveys include a way to assess voluntary or involuntary withdrawal, or to accurately measure concepts such as affectiveness).

How institutions shape completion

As a result of increased differentiation in higher education pathways, the distribution of returns to education is now more likely to be formed by the *quality* of postsecondary careers-in other words, where, how, and when a student attends, and whether and how long he takes to complete a college degree (Astin and Oseguera, 2004; Karabel and Astin, 1975). Individual attributes do not always affect student persistence directly, but rather affect it indirectly, through interactions with institutional context. The institutions a student attends affect his "passage through the system of higher education itself" (Karabel and Astin 1975: 383). Adam Gamoran (2001) posited in his *Forecast for the 21st Century* that as enrollment in postsecondary schooling becomes more universal, we can expect increasing distinctions among institutions, in order "to preserve the status hierarchy even as all students reach some form of higher education" (145).

Studies of the most elite institutions, such as William Bowen and Derek Bok's (1998) research using the College and Beyond dataset (C&B), find variation in degree completion rates by school selectivity, even within a truncated sample. Students from highly selective schools complete bachelor's degrees faster than students at less selective (but still selective) schools (Bowen and Bok, 1998). Students beginning at two-year schools, and those starting at nonselective colleges, have lower rates of completion than students attending four-year selective schools (Adelman 1999; Cabrera et al. 2003). Alexander Astin and his colleagues (1998) have found that degree attainment varies by institutional type, with students at private colleges and universities completing degrees at higher rates than those attending public institutions.

Higher education research has begun to identify structural factors that influence college completion, above and beyond an individual's characteristics, although this area of research is still quite limited. Organizational factors, such as the size of the institution, impact students' postsecondary experiences (Berger & Braxton, 1998; Hearn & Holdsworth, 2002). The development of cognitive maps and strategies for maneuvering the campus environment (Attinasi, 1989) may be particularly important for students in large, public institutions. One comprehensive review of retention programs (Myers, 2003) asserted that the institutional environment has a powerful impact on students' satisfaction with and success in an institution. The institutions that are successful in retaining students appear to be those that are responsive to the

academic, social, and cultural needs of their students. Other research has examined the role of learning communities, developmental education, and student support services in promoting completion (Grubb, 2001; Muraskin, 2004; Tinto, 1997). In general, these studies have found mixed effects, and have been able to draw few firm conclusions, partly due to difficulties in assessing true "effects" because of selection bias and other methodological issues.

Do students have a better chance of completing a college degree if they attend a college that "fits" their academic ability? The answer is unclear. On the one hand, Bowen and Bok (1998) find that selective institutions advantage all students, regardless of their prior academic preparation. In fact, "the college or university that a student attends is a much better prediction of the odds of graduating than is the student's own SAT score" (Bowen and Bok 1998: 65). Thus, they find little support for the hypothesis that students graduate at higher rates when they attend institutions that "fit" with their SAT scores. In fact, Black students with low test scores were more likely to complete a degree if they attended a *more* selective institution, rather than a less selective one. Bowen and Bok posit three potential explanations for this benefit of elite institution attendance. First, the complex admissions processes at selective schools may better identify students who are successful in arenas other than testing, that is, they may observe characteristics that are somewhat unobservable to the researcher. Second, they have greater resources and institutional characteristics that promote academic and social integration, which leads to graduation. Finally, students attending elite schools may be a selected group on factors other than test scores, in that they are more invested in completing a degree, and therefore are more committed to the final product. However, Audrey Light and Wayne Strayer (2000) produced different results using the National Longitudinal Survey of Youth, a national dataset not restricted to selective institutions. "For students at the bottom of the observed ability distribution, graduation probabilities decline dramatically as college quality increases; these students hurt their chances of completing college by attending high-quality schools" (301).

A "match" in terms of college cost expectations does appear to impact student persistence, but this also varies by social class. Paulsen and St. John (2002) state that "when it comes to the fixed costs of college . . . cost-conscious college choices among the middle- and upper-income students promote persistence, whereas cost-conscious college choices among poor and working-class students tend to reduce their likelihood of persistence in college" (229). In addition, receiving financial aid has a negative, rather than positive, effect on persistence among low-income students, which the authors attribute to the inadequacy of existing aid.

COLLEGE OUTCOMES

Understanding the myriad ways in which a college degree pays off-financially, socially, and psychologically-is a complex area of inquiry that some higher education researchers have ventured into. This is among the most methodologically challenging research topics, since analysts must work to distinguish the ways in which college itself affects students

Returns to higher education

There is a great deal of evidence indicating a strong relationship between college completion and lifetime earnings. The schools adults attend affect their later life chances through effects on later education, occupation, and income. Some researchers have found an economic payoff to attending a selective college rather than a nonselective one, even after controlling for student ability (Berhman, Rosenzweig, & Taub, 1996; Bowen & Bok, 1998; Carnevale & Rose, 2003; Daniel, Black, & Smith, 1997; Hoxby, 1998; Kane, 1998; NCES, 2000). Admission to graduate and profession school is also enhanced by selective school attendance (Brewer et al., 1998; Mullen et al., 2003). However, the returns vary by race and class, with the greatest returns to elite college attendance accruing for Black and low-income students (Dale & Krueger, 1999; Loury & Gorman, 1995). Thus, it is apparent that economic stratification is reinforced by socioeconomic differences in where one attends college.

The number of colleges a student attends also impacts the college wage premium (Light & Strayer, 2004). Light and Strayer (2004), using longitudinal data from the NLSY, tested the direct and indirect impact of transfer (four-four, two-two, and a combination of two-four) on the returns to a bachelor's degree. In other words, they asked "whether the wages of workers with identical college degrees vary with their college transfer patterns" (2). They concluded that indeed, transfer decisions have a significant impact on wages both indirectly, by enhancing odds of college graduation, and directly, by accruing an additional wage premium. Students who transferred among four-year colleges took an average of one year longer than non-transfer students who attended only one four-year college to earn a bachelor's degree, but the payoff to their degree was six to seven percent higher. The authors contend that this premium is evidence of a return to successful college "matching." This is a reasonable proposition; however several improvements to the study, most importantly a more complete assessment of the number of colleges attended, would strengthen their argument.[7]

Research on the nonmaterial outcomes of higher education (i.e., atti-

tudes and values) is best summarized in Pascarella and Terenzini (2005). As the authors note, extant research is quite limited: its subjects are most often White, are usually from middle- to upper-class backgrounds, are of traditional age when entering college, usually finish college in a timely fashion, and reside on campus during college. There is far less research on the effects of college for minority students, those that follow non-traditional attendance patterns, those that have life events during schooling, and those that take longer to finish college. In addition, these studies emphasize outcomes accruing from the bachelor's degree-rarely are nonmaterial returns from associate or graduate degrees measured.

Additionally, the literature on the social returns to a college degree is quite limited. Extant literature suggests that neighborhoods where the majority of adults lack a college diploma (and often a high school diploma as well) suffer from higher crime rates, higher unemployment, and higher levels of welfare receipt (Berhman & Stacey, 1997; Malveaux, 2003). Higher education research also has very little to say about the social costs of college dropout.

CONCLUSION

The transition(s) to college are complicated, and a full understanding of the process requires an examination from a multidisciplinary perspective. Higher education research, in drawing from a multitude of disciplinary and practice-based approaches, has contributed a great deal to our knowledge about this area. Yet every body of research is in some ways incomplete. In this case, the greatest shortcoming is with regard to the type and quality of empirical testing of theories of this transition.

Methodological challenges in assessing the transition to college

1. Data

Research on postsecondary pathways is often compromised by the dataset employed. For example, the Beginning Postsecondary Students longitudinal study (most often used in financial aid research) and the CIRP include only first-time enrollees in higher education enrolled full-time, thus excluding students with prior educational experience and those who enrolled part-time. Longitudinal surveys also often lack measures of educational aspirations after a student enters college, thus making it difficult to assess the impact of changing aspirations on postsecondary pathways.

Studies of college completion are also limited in their usefulness by a

right-censoring problem-that is, none of the databases created by the National Center for Education Statistics follow students for more than eight to ten years after high school graduation. Thus, we have a short window of time in which to observe initial enrollment, attendance patterns, and completion for students who delay initial entry into college. A better understanding of college transitions over the life course, particularly for nontraditional students, would be achieved if longitudinal datasets followed students for a longer period of time.

In addition, it is becoming increasingly necessary that students be followed across school systems, and indeed across state lines, in order to gather complete data on their schooling trajectories. Secondary and higher education databases need to be linked, together with employment and earnings data, if we are to truly better understand mechanisms contributing to student success.

2. Methods

In general, researchers in higher education have employed more rigorous methods over the last fifteen years. This is evidenced, in part, by the increasingly widespread use of logistic regression techniques, which are most often used in this body of research in predicting college attendance, retention, and completion (Peng, So, Stage, & St. John, 2002). At the same time, as Peng and her colleagues have noted, "confusion continues to exist over terms, concepts, practices, and interpretations" of this method (p. 260). As a result, outcomes of interest are sometimes not clearly conceptualized or defined, and it is occasionally difficult to compare findings across studies. Another recent improvement to the literature is the appearance of studies using event history analysis (e.g., DesJardins et al., 2002; DesJardins, McCall, Ahlburg, & Moye, 2002; Ishitani & DesJardins, 2002), which reflect the conceptualization of the transition to college as a longitudinal process. The publication of a new textbook on survival analysis geared towards those conducting education research has brought this technique to a wider audience (Singer & Willett, 2003); yet a very small number of researchers dominate the extant work using event history analysis.

An additional concern raised by a review of the literature is that many higher education researchers fail to be sufficiently critical of issues such as the attribution of causality. While this is a problem present in all disciplines, the extent to which problems of selection bias, reliability and validity of survey items, endogeneity, response rates and missing data, and survey attrition are set aside in higher education research is great. Solutions to these concerns (i.e., instrumental variables, matching) are

often underutilized. In addition, too few studies distinguish between effects occurring at different levels (i.e., individual versus institution) by employing hierarchical linear modeling. As a result, there is relatively little work distinguishing between micro- and macro-level factors shaping postsecondary experiences and outcomes.

There are disproportionately few evaluations of program effectiveness, and thus the question of "what works" is rarely adequately addressed in higher education. In other words, we have often failed to adequately connect theory to practice. This problem is especially evident when we consider models of retention that dominate the field (such as Tinto's student integration model), but lack rigorous empirical analysis largely due to difficulties in assessing the direction and nature of causality in the student retention process. In other words, the many studies that show an association between academic and/or social integration and student retention cannot be said to have proved that socially integrating students into a campus *works* to retain them.

Advancing the research agenda

We have much more to learn about the transition to college. There are several areas of interest that deserve further exploration. First among them is the intersection between student choices and structural constraints, and how these interactions shape student success. How do students adapt to changes in financial aid and admissions policies? How might the marketization of higher education shape how students attend college? How are today's students choosing colleges, and how are colleges choosing students? This type of research requires models that account for both sides of the choice process, the individual and the institution.

Further work is needed to better conceptualize the multitude of transitions occurring both into college and within college. The transition from high school to college is but one transition today's students make. A true understanding of inequalities in higher education requires that we push further, to understand new forms of differentiation within the system, and where the greatest gaps exist between advantaged and disadvantaged students. Close attention ought to be paid to differences in transitions made by older and younger, independent and dependent students, and the apparent narrowing of the racial gap in college participation should not lead us to neglect the salience of race in higher education.

Finally, we must work to enhance and improve the type of data we collect and utilize in our research. Throughout this review we have noted areas of research weakened by a lack of good data. These limitations,

while understandable from an economic and logistical perspective, have to be overcome. Higher education researchers should be active in creating datasets linking state policy and institutional data with measures of student outcomes so that we can better understand the contexts shaping successful transitions.

Notes

1 It should be noted that it is not uncommon for researchers to choose to publish their findings in higher education journals rather than disciplinary journals in order to best reach audiences that will utilize their work. At the same time, some individuals split placement of their articles between disciplinary and higher education journals in order to meet requirements of their academic tenure committees, or based on the best "fit" of a given piece. This is especially common among sociologists. Thus, it should be recognized that what we know about the transition to higher education from "higher education research" is presented in several outlets, and therefore some of the sociology and economics literature reviews included in this project will necessarily include some common ground with this review.

2 At least one-fourth of the entries in the higher education bibliography created for this project are concerned with college access and enrollment in higher education and approximately one-fifth focus on degree completion.

3 There is currently a debate taking place between several higher education researchers and authors of reports issued by the National Center of Education Statistics regarding the factors contributing to college access. Edward St. John and Don Heller claim that NCES-funded research-which asserts that poor academic preparation, rather than high tuition costs, is the primary barrier to college access for low-income adults- is both conceptually and methodologically flawed. One problem is the common omission of financial aid variables from models predicting college entry-many NCES surveys lack good measures of financial aid, and in the absence of such measures, researchers have often concluded that preparation matters more (Glenn, 2004).

4 Choy (2002) defines the traditional route as enrolling in a four-year college immediately following high school, attending that institution continuously and full-time, and completing a degree in four years.

5 This is not to say that community college research is widespread in higher education. Indeed, relatively little of it is published in major journals or presented at conferences. Community college research, much like the institution itself, is in some ways the "stepchild" of higher education research, which is dominated by work on four-year institutions.

6 This may be due, in part, to increased credit requirements imposed by colleges and universities.

7 Light and Strayer's measure of schools attended is based on the "last few colleges attended," rather than a complete transcript history (2003: 7). In addition, it would be useful to take into account any penalty to the odds of degree completion when formulating a theory of wage returns. In other words, transferring colleges may simultaneously reduce the odds of degree completion and increase the returns to that degree-a theory of reasons for transfer should take both factors into account.

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SARA GOLDRICK-RAB is an assistant professor of Educational Policy Studies and Sociology at the University of Wisconsin, Madison, and a faculty affiliate of the Wisconsin Center for the Advancement of Postsecondary Education (WISCAPE) Scholar. She specializes in the study of social stratification in higher education, and is particularly interested in inequalities related to student mobility. Current research projects include a study of path-dependence in postsecondary transitions, and an analysis of the college pathways of Chicago Public School students.

Background: Higher education researchers have much to say about the transition to college. This field focuses primarily on inequities in college participation and completion, the rela-tive importance of high school preparation, and the utility of financial aid in promoting enrollment. This literature's strongest conceptual emphasis is on theoretical models of stu-dent retention. Less is known about other facets of the transition to college, including differ-ent postsecondary pathways and college outcomes. Purpose: This paper describes the major findings of research on the transition to co... Of course, this is not to say that one should avoid pursuing a higher education or should not consider getting a degree, because education is an invaluable experience that can help a person become more open-minded and expose them to ideas that they may not have believed in prior to going to college.Â Factors such as student loan debt, unemployment rates, and the massive wealth gap have not only prevented youth and college grads from being able to afford their own homes, but also things like cars, health care, groceries, etc. In high school, you have teachers taking attendance, providing you lots of opportunities to earn marks, and lots of scaffolding built into assignments in order to make you successful. College is not like that. In many classes, attendance is not taken. You are likely only going to have a few major grades, so messing up on one will have a great impact on your final grade. And most college assignments are not scaffolded like in high school, so you are expected to have the skills to do them without much in the way of assistance from the instructor. Sometimes even the brightest of students will fai