

Economic Influences on Persistence Reconsidered

How Can Finance Research Inform the Reconceptualization of Persistence Models?

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Financial assistance to college students increased from a meager \$557 million in 1963-1964 (Lewis 1989) to a phenomenal \$55.7 billion in 1996-1997 ("Average Cost of Tuition" 1997). Because of the enormity of this investment it is not surprising that a single policy question-How do prices and student subsidies influence the ability of students to persist?-has motivated much of the research on the economic aspects of persistence over three decades (St. John 1994). The economic studies examine how financial assistance equalized opportunities to persist in college for those students in need of financial support (St. John et al. 1994; Andrieu and St. John 1993; Astin 1975; Terkla 1985). However, because financial aid is not the only reason students persist in college (e.g., Stampen and Cabrera 1986, 1988), recently researchers have developed more complete models that seek to explain how finances interact with other factors that influence college persistence (e.g., Cabrera, Nora, and Castaneda 1993; St. John, Paulsen, and Starkey 1996). This recent line of inquiry can inform efforts to build a more complete understanding of the departure puzzle. In this chapter we first examine the evolution of economic models and then explore ways of integrating the logic of the new economic models into mainstream persistence research. We summarize by articulating a set of challenges facing persistence researchers.

The Evolution of Economic Models of Persistence

Research on factors believed to have an influence on college student persistence has been dominated by two distinct, yet overlapping, lines of inquiry: those studies that have focused on an economic perspective and those that have based their investigative efforts along a student-institution fit perspective. While both of these lines of inquiry address factors that influence a student to stay in college, they do so through competing explanations. Academic and social collegiate experiences emerge as primary determinants of persistence in studies that focus on student-institution fit (Pascarella and Terenzini 1991), while financial need, student aid packaging, and adequacy of aid are of central concern in those studies that focus on the economic perspective (Cabrera, Nora, and Castaneda 1992; Nora and Horvath 1989; St. John, Paulsen, and Starkey 1996). Moreover, the multiplicity of theoretical assumptions and conceptual frameworks has led to the suggestions of a confusing array of intervention strategies. While financial aid from government and institutional sources supports access and persistence in college (Wilcox 1991), enhancing the cognitive and affective development as they relate to student-departure decisions would be stressed by those adhering to a student-institution fit model. Clearly, a better understanding of factors impacting student persistence in college emerges when both of these lines of conceptualization inquiry are considered.

The Economic Approach

Reliance on price-response theories and their allied theory of targeted subsidies is evident in research bringing about an economic approach to the investigation of student persistence (e.g., Manski and Wise 1983; St. John 1990; St. John, Kirshstein, and Noell 1991; Stampen and Cabrera 1986, 1988). Essentially, price-response theories focus in part on economic factors whereby the social and economic benefits of attending college are believed to outweigh any costs and benefits associated with alternative activities (e.g., working full-time). A critical component in these cost/benefit analyses is the student's perception of his or her ability (or inability) to pay for college (Becker 1964). While price-response theories provide a conceptual foundation for examining persistence, the theory of targeted subsidies suggests that the means to influence such behavior is through subsidies targeted at specific groups based on their

ability to pay. Reduced tuition, direct grants, low-interest loans, and subsidized work-study programs all seek to equalize students on their ability to pay for college education and to increase the benefits derived from attending college (Bowen 1977; Cabrera, Stampen, and Hansen 1990). This line of research has focused on the overall effect of financial aid on persistence (e.g., Astin 1975; Murdock 1987; Stampen and Cabrera 1986, 1988); the sensitivity of persistence decisions to charges along with tuition reduction, grants, loans, and work-study awards (e.g., Astin 1975; Nora 1990; St. John 1990, 1994; St. John, Kirshstein, and Noell 1991; Voorhees 1985); and the effectiveness of particular student aid packages in the retention of minorities (e.g., Astin 1975; Olivas 1985; Nora 1990; Nora and Horvath 1989; St. John 1990). These studies focus on actual effects of student aid rather than on perceptions of aid adequacy or the adequacy of aid relative to college costs.

However, economic studies provide an incomplete view of the true nature of financial influences on persistence in college, compared to recent integrative models. They focus on the influence of aid, along with the factors that need to be controlled to assess this effect, rather than attempting to construct a logical model that assesses interactions among all of the important factors that influence persistence. Two circumstances have handicapped this line of inquiry: methodological problems and shortcomings in the conceptualization of the persistence phenomenon.

First, some of the early economic studies on persistence were primarily impact-oriented (Cabrera, Stampen, and Hansen 1990; Nora 1990; Voorhees 1985).^{*} While they took into account such important predictors of persistence as precollege motivational factors, precollege academic ability and achievement, demographic factors, students' socioeconomic status, and college performance, they did so with the purpose of controlling for sources of variance that substantially interact with the direct effects of prices and subsidies. The emphasis was on ascertaining the direct effects of financial aid on persistence, not the effects of noneconomic factors. This approach was limited in that it did not address the ways financial circumstances interacted with other factors in a manner more complex than would be evident from a measure of direct effect.

^{*} Other researchers attempted to integrate variables related to commitments and college experiences (e.g., Andrieu and St. John 1993; St. John et al. 1994). This line of research provided the foundation for the nexus model (St. John, Paulsen, and Starkey 1996) discussed below.

Second, the economic-impact approach underestimated the role that the institution plays in shaping persistence decisions. Factors such as student-support systems, interaction with faculty, and affective outcomes associated with college, while known to play a role (Pascarella and Terenzini 1991), were seldom sufficiently considered in economic-impact studies. Indeed the extant data sets typically used in this research usually do not include variables related to some of these forces. Further, to address the question of fit, which is important from an institutional perspective, most persistence researchers conducted supplemental surveys.

Student-Institution Fit Approach

Research utilizing this approach views persistence decisions as the end product of a successful match between a student and his or her academic and social environment in a higher-education setting (Bean 1980; Spady 1970, 1971; Tinto 1987, 1993). Experiences with the academic and social realms of an institution are seen as playing a key role in the cognitive and affective development of the student. In turn, these developmental changes are presumed to affect a student's commitments to an institution and to college completion. The stronger these commitments are, the greater the probability that a student will remain enrolled in college (Tinto 1987, 1993).

With the exception of Bean (1982), the early proponents of this approach did not incorporate finances as an independent variable. The underlying assumption was that personal or family finances were important only in helping to shape students' educational aspirations and their subsequent selection of institutions. In other words, once students enrolled in college, finances were disregarded as instrumental in playing a role in persistence decisions (Tinto 1987). The implicit assumption being made was that financial need was met.

In 1993 Tinto revisited his student integration model and included student finances as a key component in the adjustment of the student to college. Such a revision, while consistent with the mounting evidence highlighting the role of financial aid on persistence (e.g., Cabrera, Nora, and Castañeda 1992; Olivas 1985; Stampen and Cabrera 1986, 1988; Murdock 1987; Nora 1990; St. John 1989; St. John, Kirshstein, and Noell 1991; Voorhees 1985), did not substantially influence subsequent research. Most of the persistence research using the institutional-fit model continued to disregard finances (Braxton, Sullivan, and Johnson 1997). Below we review

integrative studies that are an exception to this pattern of ignoring the crucial role of finances.

Integrative Approaches

Efforts at integrating both lines of research have followed two paths. Early studies by Voorhees (1985), Moline (1987), and Nora (1990) sought to explore the interconnections between financial aid and other variables (e.g., student grades) found to have an effect on student persistence. Later approaches, such as the ability-to-pay model (Cabrera, Stampen, and Hansen 1990; Cabrera, Nora, and Castaneda 1992) and the college choice-persistence nexus model (St. John, Paulsen, and Starkey 1996), have attempted to clarify the process by which ability to pay and financial aid are interrelated with collegiate experiences and the reenrollment decisions of students. Relying on path analysis, structural equation modeling, and sequential logistic regressions, the major thrust of this approach has been to uncover the interconnections that link financial factors and nonfinancial factors as much as documenting the direct and indirect effects of finances on persistence decisions.

The Early Integrative Models

In 1985 Voorhees examined the association between federal campus-based aid programs and the persistence of high-need first-year college students. His model of persistence reflected withdrawal decisions as the by-product of a two-stage process whereby financial resources that students bring to college, students' demographic characteristics, and academic ability would determine the type of campus-based financial aid programs granted, their academic performance in college, and, ultimately, persistence. Moline (1987), while examining persistence decisions among students also enrolled in a commuter institution, found that merit aid exerted an indirect effect on students' departure through the academic performance of students. Nora (1990) examined the effect of campus-based resources on the retention of Chicano community college students. Nora's model approached persistence decisions as a three-stage process involving the academic ability of students as they entered college, the financial need of those students, different forms of campus-based financial aid, and the academic performance of students during their first year in college. His model also explained three-quarters of the variance in the persistence process and highlighted the

complex interplay among financial aid (both campus- and non-campus-based) and the academic performance of students.

While the notion of examining the process involved in the withdrawal of students from college furthered research on finances (the economic perspective) by stressing the need for a simultaneous analysis of numerous constructs, a common problem of this early research was not addressed; the adjustment of students to college in the persistence process was totally disregarded. For example, current institutional commitments were omitted. Nora and Horvath (1989), as well as Stampen and Cabrera (1986), noted that the role of finances in the adjustment process needed to be explicitly examined from both conceptual and empirical bases.

The Ability-to-Pay Model

Cabrera, Stampen, and Hansen (1990) also argued that a more comprehensive view of college persistence could be secured by merging economic theory with persistence theory. They reasoned that researchers should disentangle the indirect and direct effects of finances from intellectual and nonintellectual factors related to collegiate experiences. Building upon educational attainment theory, organizational theory, cost/benefit theory, and institution-student fit theory, the model they advanced portrayed persistence as the product of a complex longitudinal process involving the interaction between the student and the institution. While acknowledging that prior academic skills, positive interactions with faculty and peers, as well as goals and institutional commitments are key for explaining persistence, they also recognized that such factors as encouragement and support from significant others and ability to pay could moderate the adjustment of the student with the institution. In this context they postulated that ability to pay was a precondition for the attainment of the cognitive and noncognitive outcomes, due to its role in removing or reducing a student's barriers to participate in the college academic and social dimensions of the institution while freeing such a student of the need to work long hours and from financial concern. Testing the model on a sample of college students drawn from the National Center for Educational Statistics (NCES) High School and Beyond 1980 Senior Cohort, Cabrera, Stampen, and Hansen (1990) found that adding college-related variables increased the proportion of variance explained over and above a model that presumed that persistence was primarily affected by economic factors (22.9 percent vs. 14.1 percent). They also found that finances, while having a direct effect on persistence decisions, moderated the

effects of goal commitments. In short, students satisfied with their ability to pay for college had higher aspirations and higher chances to persist in college than their less-satisfied and lower-motivated counterparts.

Then Cabrera et al. (1992) postulated that finances could have a dual role in the persistence of college students, as a refinement to the ability-to-pay model. Finances were believed to increase the chances of persistence to graduation because of their role in increasing cost-related benefits while at the same time facilitating the social and academic integration of the student on campus. The researchers also argued that finances were comprised of two dimensions: an objective component, reflecting a student's availability of resources; and a subjective or intangible component that underscored a student's self-perceptions of ability to finance college-related expenses. They considered that the reception of financial aid could be a more reliable indicator of a student's ability to pay than his/her socioeconomic status. Cabrera et al. (1992) approached persistence as a complex process linking experiences with the institution, cognitive and affective changes resulting from collegiate experiences, a student's commitments to the institution and to the goal of college completion, his/her intent to persist at the institution, perceptions of finances, and the extent to which the student felt encouraged and supported by friends and family.

As a whole, results supported the proposition that persistence decisions underscore a process among cognitive and affective variables as well as financial-related factors. While financial aid was found to exert only in direct effects on persistence decisions, the total effect of this variable ranked third among all the constructs in the model. The results, however, emphasized the indirect nature of the role of finances. on the adjustment of students to college. Receiving some form of financial aid facilitated a student's interactions with peers. Financial aid was also found to enhance the student's academic performance in college while increasing intent to persist. Being satisfied with one's ability to pay for college, on the other hand, facilitated the student's academic and intellectual development in college. While highlighting the indirect nature of finances, the study also emphasized that decisions to persist are the result of a complex process in which finances, however important, were but one of the many factors that played a role.

The College Choice-Persistence Nexus Model

Similar to other recent models (e.g., Cabrera et al. 1992; St. John et al. 1994), the nexus model (St. John, Paulsen, and Starkey 1996) reflected

the need to merge the economic perspective with the student-institution fit perspective.* However, St. John, Paulsen, and Starkey (1996) noted that efforts at integrating both perspectives had failed to incorporate a major component in the enrollment-persistence process: namely, the decision-making process in selecting a college (i.e., a student's college-choice phase) (Hossler, Braxton, and Coopersmith 1989). The omission of this component led to creating an "artificial" and isolated endeavor rather than being part of a continuous and interconnected student decision process. To compensate for this deficiency in earlier models, St. John and colleagues formulated a model that articulated a nexus between college choice and persistence, while at the same time clarifying the role that financial aid-related factors exert in student matriculation to and persistence in college.

The nexus model hypothesized that persistence was shaped through a three-stage process. In the first stage socioeconomic factors as well as academic ability were believed to affect a student's predisposition to pursue a college education and perceptions of financial circumstances. During the second stage the student estimated the benefits and costs associated with a particular institution that would induce the student to develop an initial commitment to enroll in college and further affect the decision to remain in college. Within this context, financial aid would not only positively influence thoughts of matriculation but would also predispose the student to select a particular institution. Once the student entered college (the third stage), college characteristics (e.g., the type of college attended), collegiate experiences, and academic performance in college helped modify or reinforce educational aspirations. Positive social and academic experiences in college and an adequate academic performance reinforced or even enhanced the student's perceptions of economic and noneconomic benefits associated with enrollment in and graduation from the institution. Financial aid was believed to positively affect persistence decisions by maintaining an equilibrium between the cost of attending college and the benefits to be derived from the attainment of an educational degree. Negative college experiences, such as increases in tuition, affected the benefits/cost equilibrium and pushed the student toward withdrawal.

* St. John et al. (1994) merged the two perspectives by treating aspirations as an indicator of initial commitment and incorporating detailed information on college characteristics and experiences as being logically related to integration processes. The nexus model further adapted this approach.

St. John, Paulsen, and Starkey (1996) established support for the proposition that there existed a nexus between a student's college-choice stage and that student's subsequent persistence in college. They also reported that by incorporating college choice, along with college-experience variables included in the base model (St. John et al. 1994), the new choice-related variables modestly increased the proportion of variance explained. The nexus model revealed that financial factors were found to exert effects on both college choice and persistence in college. However, about half the total variance in this persistence process was explained by tuition, student financial aid, food and travel, housing, and other living costs. In addition, a follow-up study using the nexus model found that the direct effect of financial variables explained about half of the variance in persistence by students in both public and private colleges (Paulsen and St. John 1997).

New Understandings

Though differing in conceptualizations, unit of analysis (national cohorts vs. institutional cohorts), methodologies (logistic regression vs. linear structural equation modeling), and databases used, the integrative efforts by the nexus and the ability-to-pay models converge in reaching two major conclusions regarding finances. We state these as new understandings that can inform future research efforts.

First, both models substantiate the fact that a student's finances are comprised of tangible and intangible factors. The tangible element includes indicators of a student's ability to afford college-related costs-e.g., personal savings, reception of financial aid, financial-aid packaging (Cabrera, Stampen, and Hansen 1990; Cabrera, Nora, and Castaneda 1992, 1993; St. John 1994; St. John, Paulsen, and Starkey 1996). The second component of a student's finances is more psychological in nature; it embodies the student's perceptions regarding her/his financial circumstances. Integrative efforts also concur in depicting these perceptions as being cognitive and affective in nature. The cognitive strand represents calculations by which the student ponders the value of attending college against its costs. Satisfaction with cost of attendance, the affective component, is the outcome of this cognitive process. To be satisfied with the cost of attending means the student believes that the benefits of attending a particular institution outweigh its costs (Cabrera, Stampen, and Hansen 1990; Cabrera, Nora, and Castaneda 1992, 1993; St. John 1994; St. John, Paulsen, and Starkey 1996). Integrative efforts also concur in viewing satisfaction with

finances as a dynamic process. Since satisfaction is closely associated with a delicate balance between perceived costs and benefits, it then follows that any factor affecting any component of the cost/benefit equation can trigger major changes in the correlated attitude. In the nexus model (St. John, Paulsen, and Starkey 1996), for instance, changes in the composition of the original student-aid package or unexpected increases in tuition and fees are seen to lead to dissatisfaction by the effect these changes have on the original cost/benefit computations. In the ability to pay model, another major source of change is played by those individuals who exert a significant role in the life of the student (Nora 1990; Cabrera, Stampen, and Hansen 1990; Cabrera, Nora, and Castaneda 1992, 1993). Both approaches support the proposition that the student can modify her/his original cost/benefit estimates as new significant people enter her/his life or when the original significant others revalue the benefits attached to a particular institution.

Second, these efforts concluded that finances exert both direct and indirect effects on persistence. While both the nexus and the ability-to-pay models have substantiated this connection empirically, they have provided little grounded discussion for this interconnection. Such a frame of reference, however, can be found in Maslow's (1954) motivation theory. Maslow argues that individuals evolve when they are driven to satisfy such higher-order needs as self-esteem and self-actualization. The pursuit of a college degree and a concurrent intellectual development clearly fit within Maslow's higher-order taxonomy. For Maslow, the desire to satisfy higher-order needs can only take place once basic needs are satisfied. With regard to the student-institution fit model, the meeting of tangible and intangible financial needs provides the freedom to engage in and establish relationships with faculty and peers, to actively participate in classroom activities, and to commit enough time to all those endeavors that promote intellectual development. According to Maslow, dissatisfaction of basic needs can lead to stagnation and even regression to earlier developmental stages. For Maslow, these basic needs become prepotent; that is, they dominate an individual's life, diverting all efforts and thoughts to the satisfaction of those primary needs. Extending the Maslow concept of prepotency to integrative efforts portrays a situation where a student's pursuit of cognitive and affective development can be redirected when financial needs are no longer met. Financial need then becomes a psychological stressor compelling the student to divert his/her attention from academic endeavors to monetary concerns. If financial circumstances remain as such, the student is pulled

away from the academic and social domains of the institution to pursue alternative activities (e.g., working, obsessing over financial problems).

Integrating Financial Variables into Student-Institution Fit Models

In their review of the research that has tested Tinto's student integration model, Braxton, Sullivan, and Johnson (1997) not only document the validity of the relationship among college-related variables but also stress that incorporation of financial variables in the student integration model is wanting. Our review of those efforts that integrate finances into models of student departure (Cabrera, Stampen, and Hansen 1990; Cabrera, Nora, and Castañeda 1992, 1993; St. John, Paulsen, and Starkey 1996) provides empirical evidence that this emerging approach offers the means to conceptualize the role of finances both in the adjustment to college and in persistence decisions. Below we explore ways the new understandings reached from these integrative studies can inform future efforts to refine and reconceptualize persistence models.

The Influence of Perceptions of Finances to Institutional Commitment

Research that focuses on the interactions between financial variables and the social and academic integration processes essentially treats perceptions of aid as integral to the formation of commitments. Cabrera et al. (1992) conducted a survey that asked students about the adequacy of their aid, receiving perceptual responses. Further, these perceptions of the ability to pay represented an aspect of the initial commitment students made to their college. In their nexus model St. John, Paulsen, and Starkey (1996) distinguished between the financial reasons for choosing a college and the actual prices and price subsidies students received. They treated these initial calculations about college affordability (e.g., choosing a college because of low tuition, high aid, proximity to home, or opportunity to work) as an integral part of the initial commitment process. Both these lines of inquiry clearly indicate that the early judgments students make about their financial circumstances influence the initial commitments they make to their institutions.

This research illustrates two ways of constructing variables related to perceptions about aid by considering: (1) whether students' decisions to enroll in the fall were influenced by high aid, low tuition, or other cost-related factors (the nexus approach); or (2) whether students thought their financial support

was adequate, given the costs of attending (the integrated approach). Both of these approaches to constructing variables relate to perceptions of finance and provide insights that relate to, or take place at the same time as, the initial institutional commitments that are made to attend. There is a slightly different logic related to entering both types of variables into an integrated model.

The nexus model also offers a way of reconceptualizing the conceptual underpinning of initial commitment variables typically included in persistence research. Rather than treating initial commitment as a single variable with a scale, the model suggests identifying three sets of variables related to initial commitments that are integral to the college choice process and that, by extension, can have an influence on subsequent experiences in the persistence process. In other words, the college choice-persistence nexus provides an alternative way of conceptualizing how students make their initial commitments. The research clearly demonstrates that financial commitments are based on an understanding of the financial circumstances—including the ability to pay for college, as well as the ability to earn money for this purpose—and are not only part of this initial cost/benefit decision but also integral to the formation of initial institutional commitments.

The Influence of Perceptions on Social and Academic Integration

The initial financial commitments students make—in the form of finance-related reasons for choosing to attend a college as well as their perceptions of their ability to pay—have an influence on subsequent integration processes. The logic of the integrated model (Cabrera, Nora, and Castañeda 1993) argues that financial attitudes can directly influence the social and academic integration processes. In their research Cabrera, Nora, and Castañeda (1992, 1993) have documented that their question about finances had a direct influence on academic integration and college grades. Their study suggests that if students do not have sufficient resources, their academic work suffers. The underlying question addressed when this approach is used differs fundamentally from the questions that most economic analysts have been concerned with when they investigate the adequacy of student aid. Economic analyses assess whether subsidies are adequate to support students through the academic year (St. John et al. 1994; St. John 1999). However, students' perceptions of adequacy are also important because their perceptions influence commitments and integration processes. If students feel their aid is inadequate, then they may take fewer courses or find work off campus, behaviors that could limit opportunities for social and academic integration.

Thus, the integrated model (Cabrera, Nora, and Castaneda 1993) provides a complete approach for systematically examining the relationship between perceptions of financial circumstance on social and academic integration processes. By focusing on this set of interactions, researchers can discern how perceptions of the adequacy of student aid influence ways students interact in their academic environments, e.g., whether the time they have for informal interactions with faculty is influenced. However, this line of research does not incorporate information on the types and amounts of aid students actually were awarded or on actual family resources, data elements necessary to assess the direct effects of student aid.

The logic of the nexus approach argues that the initial commitments students make are of a specific nature: students reconsider the specific academic, social, and financial reasons they selected their colleges when they make their eventual persistence decisions. Paulsen and St. John (1997) and St. John, Paulsen, and Starkey (1996) identify three possible linkage structures: (1) from the financial reasons for choosing a college to the eventual experience of college affordability; (2) from the academic reasons for choosing a college to the eventual academic integration process; and (3) from the social reasons for choosing a college to the social integration process. Research to date verifies the financial nexus. These studies have found that the financial reasons for choosing to attend did interact with variables related to the college experience, including achievement in college (Paulsen and St. John 1997; St. John, Paulsen, and Starkey 1996). However, the logic of the other two approaches to examining the college choice-persistence nexus has not been explicitly examined and merits examination.

Thus, the nexus approach provides a second proven approach to integrating perceptions of finances into a complete persistence model. Further, the nexus model provides a way of examining how students' perceptions of affordability-including perceptions of tuition, work, and living costs, as well as perceptions of student aid-influence their integration processes and their subsequent cost/benefit calculations about persistence (i.e., commitments at the time the departure decision is made). The model also reveals that changes over time in financial-aid packages can influence students' academic and social integration processes, as well as their subsequent persistence decisions.

The Crucial Direct Effects of Aid and Tuition

There has long been a debate within the community of persistence researchers about whether finances actually influence persistence. Initially

Tinto (1987) argued that if students said they were leaving college for financial reasons, it could be an excuse for other reasons, possibly a change in commitments. Such a claim could be true if a student truly had adequate resources to complete college. If students received adequate student aid, a condition that existed in many colleges in the 1970s because of generous federal financial aid, then such a statement could have valid logic. However, research that tested this proposition on students enrolled in the 1980s consistently found that aid was not adequate (Paulsen and St. John 1997; St. John, Oescher, and Andrieu 1992; St. John et al. 1994; St. John, Paulsen, and Starkey 1996; St. John and Starkey 1995a, 1995b). Indeed, in national studies finance-related factors (student aid, tuition, and other costs, including living) explained about half of the total variance in the persistence process (Paulsen and St. John 1997; St. John, Paulsen, and Starkey 1996). Therefore it seems naive to overlook the direct effects of financial variables based on a self-sealing assumption such as: if students say they withdraw because of finances, then they are making polite excuses for changes in commitment.

If researchers who have access to information on family income and aid awards actually build appropriate controls for these factors into their persistence models, then they can assess the direct effects of aid. If they control for family income in a multi-institution study or in a study of a campus with differentiated tuition charges, then it is also possible to assess the effects of the tuition charges as well as aid subsidies. However, it is not logical to assume that influences on academic or social integration processes will influence the amount or type of aid awarded. Rather, aid awards are made based on certain criteria, which is why high school achievement and family income should be included in models that assess the effects of amounts of aid. Therefore, it is appropriate to treat student costs and subsidies as variables that directly influence withdrawal.

It is especially important to include income from aid applications because students do not accurately report parental income in response to surveys (Byce and Schmitt 1993). Recent research that includes this type of control has proven empirically that significant and negative coefficients for an aid variable indicate aid is inadequate and that a neutral and/or positive coefficient indicates aid is adequate (St. John forthcoming; St. John, Paulsen, and Starkey 1996). Thus, there are logical and empirical reasons to examine the direct effects of student aid, especially when researchers can attain accurate information on family finances and student aid awards.

Future Research

The review of the evolution of efforts to integrate economic variables into the student-institutional fit models frequently used to investigate student departure has illuminated three ways of integrating financial variables into persistence models. More important, it has been revealed that students' perceptions of their ability to pay are integral to the commitments students make to their institutions and, thus, need to be included for multiple logical reasons.

First, persistence researchers who work within the boundaries of the student-institutional fit model should consider the influence of the ability to pay (Bean 1982; Cabrera, Nora, and Castañeda 1992, 1993). Clearly students' perceptions of their ability to pay can influence their academic performance and the extent and nature of their academic integration (Cabrera, Nora, and Castañeda 1992, 1993). Further, it is relatively easy to modify the data-collection instruments used in these integration models to include questions about perceptions of affordability. Thus, such refinements to the student-institutional fit models are both desirable conceptually and feasible.

Second, the nexus approach merits consideration by researchers who are interested in reconceptualizing the initial commitment process and the ways this process influences the college experience (inclusive of variables typically treated as social- and academic-integration processes). The initial commitments students make to colleges and universities are really comprised of a set of judgments about affordability, academic opportunities, and potential social interactions. Research that has explored the financial aspect of this early commitment has found that student perceptions about affordability interact with their college experiences (St. John, Paulsen, and Starkey 1996) and their integration processes (Cabrera, Nora, and Castañeda 1993). More researchers should begin to explore the role of the financial nexus in the persistence process because it is linked to the basic financial commitments colleges and students make to each other in the recruitment process (Paulsen and St. John 1997).

However, more research is needed to assess the influence of choosing colleges for academic and social reasons on the college experiences and (social and academic) integration processes. The need for research on the nexus between college choice and persistence can be illustrated by several examples. First, consider the student who chose a private college for a middle-class-earning major (e.g., education) but is confronted by larger-than-expected debt. She may feel it is necessary to change to a higher-earning major or

transfer to a less expensive college in order to complete the major she intended. Second, consider the student in the same college who had hopes of getting into a preferred major as an upper-division student but was unable to do so. She would be confronted by a decision to persist with another major or to change colleges to follow her interest. Financial perceptions are part of the choice process in the first instance; but they are not in the second case. Clearly, in order to untangle these types of interactions in persistence research it is necessary to include, along with finance-related reasons for choosing certain institutions, a variable related to choosing colleges based on specific majors.

Third, including variables related to actual family resources, tuition, and student aid awards is necessary in comprehensive persistence models. Research on the college choice-persistence nexus indicates no interaction between current postsecondary aspirations and finance-related variables (St. John et al. 1994; St. John, Paulsen, and Starkey 1996). In other words, students who leave college often still aspire to complete their college degrees, but their institutional commitments have changed by virtue of their decision to drop out. Thus, while affordability does influence institutional commitments through student perceptions, prices and financial aid also exert a large direct effect.

Research on the direct effects of student aid on persistence is especially important in colleges and universities with large percentages of low-income and adult students, since they are more price sensitive than traditional undergraduates (St. John and Starkey 1995a, 1995b). However, it is necessary to control for income to measure the direct effects of student aid. Therefore, if appropriate controls are included, it is possible to assess the adequacy of student aid. This means that researchers will need to integrate information from student aid applications. A workable approach for this type of analysis has been proposed (St. John 1992) and tested (St. John forthcoming; Somers 1992). Given the decline in federal grants, it is increasingly important for financial planners to know when aid is not adequate. Therefore, the economic impact approach should not be abandoned in efforts to build more complete models.

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