The Deconstructive Approach to Understanding Community College Students' Pathways and Outcomes

by

Peter Riley Bahr*
Center for the Study of Higher and Postsecondary Education
University of Michigan

Revised September 6, 2012

Prepared for the Conference on
Mapping Broad-Access Higher Education
Stanford University
December 1-2, 2011

*Please direct correspondence to the author at the Center for the Study of Higher and Postsecondary Education, University of Michigan, School of Education, Room 2108, 610 E. University Avenue, Ann Arbor, MI 48109-1259; phone: (734) 647-1652; fax: (734) 764-2510; email: prbahr@umich.edu.

The Deconstructive Approach to Understanding Community College Students' Pathways and Outcomes

ABSTRACT

Two related themes currently dominate discourse on open-access colleges, particularly community colleges: increasing college-going and degree attainment, and improving the performance of postsecondary institutions with respect to producing graduates. Largely missing from this discourse, however, is cogency concerning the innumerable ways in which students use open-access institutions and the ways in which students' patterns of use interact with institutional policies and practices to influence the outcomes that they experience. Absent a thorough understanding of students' pathways through the institution, the development of interventions and adjustment of institutional policies and practices to improve students outcomes will be more a product of guesswork than of sound empirical reasoning. Unfortunately, traditionally favored analytical approaches are unlikely to rectify this large and troubling gap in our understanding. In this essay, I present the case for a different approach – a *deconstructive* approach – to illuminate students' pathways and the relationships between these pathways and outcomes.

The Deconstructive Approach to Understanding Community College Students' Pathways and Outcomes

INTRODUCTION

In recent years, two closely related themes have come to the fore of national discourse on postsecondary education: increasing college-going and degree attainment, and improving the performance of postsecondary institutions with respect to producing graduates. The former focuses on students, particularly the characteristics that predispose a student to graduate or not. The latter focuses on the institutions in which students enroll, primarily the policies and practices that influence degree completion in the aggregate. Special attention is being paid to *open-access* institutions, especially community colleges, which by definition enforce minimal standards of admission.

Largely missing at the intersection of these two themes, however, is cogency concerning the innumerable ways in which students use open-access institutions, and the ways in which students' patterns of use interact with institutional policies and practices to influence the outcomes that they experience. Unfortunately, our understanding of what community college students are doing between college entry and eventual exit, why they are doing it, and how the pathways that follow from these decisions bear upon students' outcomes is painfully limited. As a result, our capacity to influence these outcomes also is sorely limited.

The purpose of this essay is to make the case for a reconsideration of *how* we seek to understand the relationships between students' varied pathways and their consequent outcomes in the community college. Understanding the relationships between pathways and outcomes is an essential (but largely missing) ingredient in efforts to develop and deploy effective interventions to improve students' outcomes. Likewise, this understanding is central to the evaluation and modification of existing institutional policies and practices, and the development

and implementation of new institutional policies and practices, in support of students' outcomes. Yet, our traditional methods and means of understanding these relationships is not yielding the information that we need. Here, I present the case for a different approach – a *deconstructive* approach – to illuminate students' pathways and the relationships between these pathways and students' outcomes. In making this case, I draw upon examples from my own research on remedial mathematics in community colleges to illustrate both the weaknesses of currently favored approaches and the strengths of the deconstructive approach that I propose here. I then discuss parallel weaknesses and strengths in the larger body of research on community college students and recommend adjustments to the trajectory of that research.

THE CHALLENGE OF UNDERSTANDING STUDENTS' PATHWAYS

Community colleges, as the flagships of open-access postsecondary institutions, are "open access" in more than one sense. As noted above, community colleges tend to enforce minimal standards of admission, typically requiring only the completion of a high school diploma, the completion of a general education diploma, or other evidence of a likelihood of benefiting from the educational services provided by the institution. Equally importantly, though, community colleges tend to enforce minimal requirements with respect to students' pathways through the institution. Students generally are free to pursue a credential or not, to come and go from the institution from semester to semester (or from quarter to quarter), to attend part-time or full-time, to declare a major late or not at all, to modify their academic objectives without involvement of the bureaucratic structures of the institution, to enroll in any coursework in any program of study if they meet the prerequisites (and, not infrequently, *regardless* of whether they meet the prerequisites),[1] and so on. In fact, the three core missions of the

[1] A notable exception here is frequently impacted programs, such as nursing.

community college – upward transfer, workforce development, and community education – encompass an immeasurable array of potential academic outcomes and means of achieving those outcomes, the result of which is a remarkable diversity of goals among students and an equally remarkable diversity of pathways through the institution.

In part because of the flexibility offered to students, community colleges make the impossible possible. Students who otherwise would be excluded from postsecondary education for any number of reasons (e.g., obligations to work or family, financial limitations, inadequate preparation for college) find opportunity in the community college. Hence, terms such as *nontraditional* or *underrepresented*, while applicable to U.S. postsecondary education as a whole, appear almost nonsensical when one examines the population of students in a typical community college. In reality, the community college is the primary door through which nontraditional, underrepresented, low-income, and first-generation students enter postsecondary education.

While this great flexibility has significant advantages for community college students, it also has noteworthy disadvantages. For example, Scott-Clayton (2011) argued that "community college students are often confused and sometimes overwhelmed by the complexity of navigating their community college experience" (p. 25), a finding that is corroborated by the work of Rosenbaum, Deil-Amen, and Person (2009), as well as that of Moore and Shulock (2011). From the perspective of the researcher, however, the flexibility offered to community college students presents *only* disadvantages. That is, for the researcher who seeks to understand why some students graduate and other do not, and how the policies and practices of the institution influence specific student outcomes, the complexity of students' pathways makes sound and informative research extraordinarily difficult to execute.

THE TRADITIONAL APPROACH

Input-Output Analyses

The traditionally favored approach to research on community college students and their outcomes, while important in its own way, has left largely unaddressed both the complexity of students' pathways through the institution and the relationships between these pathways and the resulting outcomes experienced by students. Considered globally, research on community college students and their outcomes is dominated by fairly simple input-output analyses, in which the occurrence of a given outcome (e.g., completion of a credential, transfer to a four-year institution) is assessed three or four years after students enter college and then analyzed as a function of students' pre-college or early-college characteristics (e.g., sex, age, race/ethnicity, placement test scores) that were measured at initial enrollment or shortly thereafter. Analyses of this sort, which typically take the form of regression models, usually result in findings that students who enter college with a particular characteristic (e.g., female students) are more or less likely to achieve the outcome of interest (e.g., completion of a credential) within some specified period of time than are students who enter college with a contrasting characteristic (e.g., male students), after controlling for other distal characteristics, such as age at entry, race/ethnicity, etc.

More important for this discussion, however, researchers often include a small set of proximal (mediating) variables to describe in a very limited fashion what students did between college entry and eventual college exit – an analytical "nod" to the numerous and varied pathways, course-taking behaviors, and enrollment patterns exhibited by community college students. Yet, the capacity of even the most detailed and complex of these models to describe students' pathways and to shed light on the influence of those pathways on subsequent outcomes is sorely limited and introduces a host of assumptions about the linearity and uniformity of

student behavior that often cannot hold up to scrutiny. Here, I offer an illustration from my own work, but examples of this nature abound and, in fact, are the mainstay of research on community college students and their outcomes.

An Example of the Traditional Input-Output Approach

In an article published in 2010, but written sometime earlier, I examined racial/ethnic differences in the achievement of college-level math competency by community college students who began their math coursework in remedial math (Bahr, 2010a). Understanding these differences is important for a number of reasons, most notably that the need for remedial assistance among community college students often is quite high, and the achievement of college-level math competency is correlated strongly with other desirable outcomes, such as degree completion and upward transfer to a four-year institution.

My approach was not unusual: I estimated the baseline differences in the likelihood of achieving college-level math competency between the four major racial/ethnic groups, and then proceeded in a series of nested logistic regression models to introduce blocks of covariates that presumably would explain the observed racial/ethnic differences. With the successive addition of each block of covariates, the direction of any change (positive or negative) in the net gaps between racial/ethnic groups was interpreted with respect to the correlations between race/ethnicity, the newly added set of covariates, and the achievement of college-level math competency. For example, bivariate analyses demonstrated that African American and Hispanic students tend, on average, to begin the remedial math sequence at lower points of entry than do White students, and a lower point of entry is associated with a lower likelihood of achieving college-level competency. Hence, introducing remedial point of entry into the model reduced the net disadvantage of African American and Hispanic students in the likelihood of achieving

college-level math competency, relative to White students.

This approach is very straightforward until one begins to consider analytically the influence on the outcome of students' behaviors in the community college. One reasonably could argue that students' behaviors are the most important covariates in an analysis of this sort because behaviors are the link between students' pre- and early-college characteristics and their eventual outcomes. In other words, one cannot expect to explain fully the observed racial/ethnic differences in the achievement of college-level math competency without reference to variation in students' pathway decisions, course-taking behaviors, and enrollment patterns in the community college. Likewise, the development of effective interventions and the efficient adjustment of institutional policies and practices hinges in large part on understanding what students are doing between college entry and exit. Hence, in the last regression model, I introduced a block of covariates that I described broadly as *enrollment patterns*, in much the same manner as have other researchers studying other aspects of community college students' outcomes (e.g., Alfonso, Bailey & Scott, 2005; Dougherty & Kienzl, 2006; Wang, 2009).[2]

Central to this set of covariates was *duration of enrollment* in the community college, measured in number of semesters. The analytical value of duration of enrollment hinged on the very reasonable and widely accepted presumption that early departure from college is an important cause of *not* achieving college-level math competency. Interestingly, the introduction of duration of enrollment into the regression model resulted in changes to the net gaps between racial/ethnic groups that, at least in part, contradicted this working hypothesis.

Recognizing that point of entry into the remedial math sequence is a principal predictor

[2] The three variables included *duration of enrollment*, *length of delay between college entry and enrollment in the first math course*, and *enrollment inconsistency*, which is a measure of the degree of semester-to-semester continuity in enrollment.

of college-level math skill attainment and, in turn, a principal explanation for racial/ethnic differences in college-level math skill attainment, I also examined the net differences in college-level math skill attainment between the several points of entry before and after the introduction of duration of enrollment into the model as a covariate. I found that the net differences in attainment between points of entry *increased* after the introduction of duration of enrollment, in opposition to the decrease that one would expect to find if early departure from college explained part of the difference in college-level skill attainment between students who began the remedial sequence at differing points of entry. In other words, if duration of enrollment is associated positively with the likelihood of achieving college-level math competency, and if students who enter the sequence at lower points are less likely to achieve college-level math competency due in part to lower average durations of enrollment (i.e. early departure from college), then the net differences between points of entry should be smaller after controlling for duration of enrollment. Instead, they were found to be larger, suggesting perhaps that greater average duration of enrollment among students who began the remedial math sequence at lower points of entry, relative to those who began at higher points of entry, is masking even larger gaps in attainment than those observed in the models that did not account for duration of enrollment.

The Weakness of the Traditional Input-Output Approach

As I mentioned at the outset of this example, the capacity of this analytical approach, which is widely accepted and employed, to advance understanding about the relationships between students' pathways and their subsequent outcomes is very limited and, in fact, may present a distorted picture of these relationships. In this particular case, the problem was my oversimplified notions about how students' time in the community college is related to their achievement of college-level math competency. In subsequent work (Bahr, 2010b), five

illuminating findings emerged. First, the relationship between duration of enrollment and the likelihood of achieving college-level math competency is anything but linear. In fact, each point of entry has a certain threshold of duration of enrollment below which the likelihood of achieving college-level competency is effectively zero – the minimum duration of enrollment necessary to advance through the requisite remedial math courses, given a student's particular point of entry. For the sake of clarity, I will refer to this threshold as m_p, meaning the minimum duration of enrollment for a given p point of entry. Second, at durations of enrollment above m_p+3 semesters or thereabouts, which accounts for a buffer that students may need to repeat a math course that they failed or to accommodate an interruption in math course-taking, differences in duration of enrollment are largely inconsequential for the likelihood of achieving college-level math competency. Third, average duration of enrollment does not differ greatly across the several points of entry. Fourth, the average duration of enrollment of students who begin near the bottom of the remedial math hierarchy exceeds m_p semesters by only a modest amount. Finally, even at exceptionally high durations of enrollment, a large gap in the attainment of college-level math skill remains between the differing points of entry. In other words, though there is a much higher rate of attrition from the remedial math sequence among students who begin at lower points of entry, attrition from the sequence does not necessarily correspond to departure from college.

One may see here that the behavior *duration of enrollment* does contribute to explaining variation in achievement of college-level math competency insofar as remaining enrolled in college for at least m_p semesters is a necessary cause of remediating successfully in most cases. My implementation of the variable in the original analysis, which was driven by oversimplified notions about the role of duration of enrollment in students' achievement of college-level math

competency, was flawed. Duration of enrollment should not have been treated solely as a linear variable. Instead, the combination of a linear term and the log would have been a better choice, and multiplicative interactions of duration of enrollment and point of entry were needed.

However, even a correct implementation of the variable would have masked the larger quandary that, though early departure from college is an important cause of not remediating successfully, an extended duration of enrollment does not produce a proportionally greater chance of success. Moreover, the gaps in achievement between students who begin at lower points of entry (among whom African American and Hispanic students are overrepresented) and those who begin at higher points of entry remain large even at high durations of enrollment. Given that there is no intrinsic reason why a student who persists for m_p+3 semesters would not complete the remedial sequence, it is clear that an important cause (or causes) of the low rate of college-level math skill attainment, and an important cause of the large disadvantage observed among African American and Hispanic students, remains both unknown and likely unknowable using the method of analysis that I employed.

In sum, among students who do not persist at least m_p semesters, the reason for the very low (near zero) rate of college-level math skill attainment was transparent, and no other variables were required to explain this outcome. However, the majority of students do persist to m_p semesters, and many persist to m_p+3 semesters. The reason for the continued low rate of college-level math skill attainment among these students was considerably less clear, and the reason for the large differences in college-level math skill attainment found between students who begin at lower points of entry and those who begin at higher points of entry was entirely opaque.

Taken together, these conclusions illustrate how uninformative was my original approach to understanding the contribution of variation in “enrollment patterns” to explaining racial/ethnic

differences in college-level math skill attainment. Though the original study provided useful information about the association between distal characteristics and the likelihood of achieving college-level math competency, it provided little information about how advantages and disadvantages on distal characteristics unfold through students' pathways and behaviors in the community college.

Other Examples of the Traditional Input-Output Approach

As I noted earlier, input-output analyses of the type that I used are exceedingly common in research on community college students, and many examples of this type of work include a limited set of variables to address students' behaviors between college entry and college exit, just as I included in my analysis. These variables typically are measured either in the first year of attendance as a proxy for students' behavior in subsequent semesters (under the assumption of no change in behavior) or with respect to the entirety of students' time in the community college (under the assumption that average behavior is a reasonable representation of behavior in individual semesters). For example, Alfonso, Bailey, and Scott (2005) examined differences between vocationally- and academically-oriented students in the likelihood of credential completion while controlling for a number of variables, including several "pathway features". In this case, "pathway features" encompassed students' overall enrollment intensity (credit load) during their time in the community college, the occurrence (or not) of interruptions in enrollment, and overall duration of enrollment (measured in full-time-equivalent semesters). Dougherty & Kienzl (2006), in a particularly detailed study of upward transfer to four-year institutions, considered the behaviors of full-time versus part-time attendance and election of an academic versus vocational program of study. Wang (2009) examined baccalaureate attainment by community college students who transferred to a four-year institution. Students' behaviors,

which she described as “college experience”, were captured with a handful of dichotomous variables indicating full-time enrollment (at the four-year institution), grade point average at the community college, and enrollment in remedial math or remedial reading. Calcagno, Crosta, Bailey, and Jenkins (2007a), though using a time-sensitive event history model as opposed to the simpler input-output regression, relied primarily on a set if distal characteristics (e.g., age, race/ethnicity, citizenship, math and verbal competency at college entry) to explain age-related differences in degree completion. They considered the influence of only two student behaviors, namely whether a student was enrolled full-time in a given semester and the length of the program of study in which the student was enrolled.

While I mention here only a few studies, and only studies that were published in prominent research journals, the same methodological approach to understanding students’ outcomes is employed by individual institutions to study their respective student populations. For example, Mourad and Hong (2008), at a community college in Michigan, argued for the need to understand “the paths to outcome attainment” (p. 22) among students in their institution, referring in this case to the completion of a credential and upward transfer to a four-year institution. They employed a sophisticated event history model, but the only behavior that they addressed in their study was grade point average.

All of the work mentioned here has provided important insights concerning which distal characteristics tend to predispose community college students to more favorable or less favorable outcomes, or, said another way, on *what* pre- or early-college characteristics differences in attainment are located. However, the work has provided comparatively little insight into how and why these differences unfold as they do. Consequently, it can speak only in the broadest manner concerning the institutional policies and practices that will optimize the likelihood that

students will complete credentials, transfer upward to four-year institutions, or experience other favorable outcomes. This is not to say, of course, that the work is not of high quality or high value. Quite to the contrary, we would not know where to focus our research questions without this important foundational work. Still, it remains that we know remarkably little about the nature of community college students' various pathways and behaviors and the influence of these pathways and behaviors on their subsequent outcomes. It seems unlikely that "more of the same" type of research will rectify this large and troubling gap in our understanding.

THE DECONSTRUCTIVE APPROACH

Defining the Deconstructive Approach

Without an in-depth understanding of *how* students progress or fail to progress through the community college, and *why* students make the choices that they do, we will not be able to develop informed interventions or efficiently modify institutional policies and practices to improve students outcomes. As Leinbach and Jenkins (2008, p. 1) argued, "understanding how students actually progress through their college programs is essential in developing strategies and choosing appropriate interventions to improve student outcomes." In other words, as long as student behavior remains a proverbial *black box*, institutional adjustments and interventions will be more a product of guesswork than of sound and empirically-based reasoning.

The answer to this problem, in my view, is a deconstructive one – an idea that is gaining traction in the research community, but not on the scale that we need at this time for reasons that I discuss later. This deconstructive approach has two facets: one quantitative in orientation and one qualitative. The quantitative approach requires the exploitation of the rich transcript-level data that have become available in recent years (Ewell & Boeke, 2007; Ewell & Jenkins, 2008; Hagedorn & Kress, 2008) to "deconstruct" the varied steps or stages through which students pass

from the point of college entry to a given outcome of interest, whether that outcome is the completion of a credential, upward transfer, achievement of college-level math competency, or something else. In other words, this approach constitutes a shift from the focus on *outcomes* that has dominated research on community college students to a focus on *process* (Bahr, 2009). Again, I will use my own work to illustrate this idea and follow it with several other examples of work in this vein.

A Quantitative Example of the Deconstructive Approach

In a recent study (Bahr, 2012a), I returned to the question of why so few students who begin the remedial sequence ultimately achieve college-level math competency, and, especially, why students who begin at lower points of entry suffer such a large disadvantage in this respect. I framed the study as a question about attrition from the remedial sequence (both math and writing, analyzed separately), specifically when and how are students lost from the sequence. Given the findings of the original study (Bahr, 2010a) that I discussed earlier, it was clear that understanding attrition from the remedial sequence would contribute greatly to understanding why large differences in math attainment exist between community college students of historically advantaged and disadvantaged racial/ethnic groups.

My analysis of the remedial math sequence focused on the group of students who remained enrolled in the community college for at least five semesters, who collectively represented about 70% of all remedial math students in the particular dataset that I employed. A period of five semesters was chosen because this figure represents the m_p threshold for students who began the sequence at the lowest point of entry (i.e., the largest possible value of m_p). In effect, I divided the primary research question into two questions of smaller size: (1) a question about why remedial math students do not persist to m_p semesters and, as a consequence, do not

achieve college-level math competency, and (2) a question about when and how students who do persist at least m_p semesters nevertheless are lost from the remedial math sequence. The latter was the focus of this particular study.

In a departure from the traditional input-output style regression model, I divided the remedial sequence into the course-taking "steps" through which student must advance in order to achieve college-level competency. I then further divided each step into constituent behaviors: (1) the attempt of a given step of the remedial sequence, (2) the delay of this step if it was attempted, (3) the course outcome (pass or fail) experienced by the student at this step, (4) the attempt of the next step in the remedial sequence, etc. Each constituent behavior was analyzed as an outcome and then subsumed as a predictor of the next constituent behavior. The only exceptions were the "attempt" outcomes, which were treated as analytical constraints. Only those students who attempted a given step could have delayed this step or experienced a course outcome in this step.

The results of this study indicated that attrition from the remedial math sequence takes three forms. First, students who begin at lower points of entry are disproportionately likely to exhibit unproductive in-sequence behaviors, resulting in *skill-specific attrition*. The most notable of these unproductive behaviors was the delay of the first math course, which predisposed students to other unfavorable behaviors and outcomes, including delays of subsequent courses and lower rates of first-attempt success in courses. Second, it was clear that beginning algebra, as a step of remedial math sequence, presented a disproportionate level of difficulty for students who advanced to this course from a lower point of entry, resulting in *course-specific attrition*: a lower rate of first-attempt success in this course than in any other course in the sequence, and a consequent elevated likelihood of attrition from the sequence at

this juncture. Finally, *escalating nonspecific attrition*, which is the increasing rate of loss of students at each step of the sequence regardless of prior behaviors or course outcomes, accounted for a meaningful fraction of the total loss of students from the sequence. This type of attrition, which was evident even among students who had otherwise promising trajectories (e.g., passing all prior courses in the subject, enrolling in courses in a timely fashion), obviously has the greatest impact on students who begin the sequence at lower points of entry because they must progress through the most steps.

In terms of implications for policy and practice, the findings of this study provided at least three potentially fruitful directions. First, the study demonstrated that a non-passing grade at *any point* in the remedial math or writing sequence is devastating for students' advancement through the sequence. Even students who demonstrate otherwise promising trajectories suffer substantial attrition from the sequence after a single non-passing grade. Immediate intervention following a non-passing grade at any point in the math or writing sequence clearly is essential if we are to improve students' chances of achieving college-level competency in basic subjects, which, in turn, is a key to improving students' success in completing credentials, transferring to four-year institutions, etc. Second, the disproportionate difficulty with beginning algebra observed among students who advanced to this course from a lower-level math course indicates the need for improved preparation in lower-level courses and/or additional instructional support in this fundamentally important step of the math sequence. Finally, when combined with the observation that very few students who do not complete the remedial sequence ultimately leave the community college with a credential and the observation that many students depart from the remedial sequence yet remain enrolled in college, the overall high rate of attrition from the sequence even under the best of circumstances suggests the need to provide assistance to

students with finding alternative credentialing paths that do not require college-level competency in math and/or writing. Such paths clearly exist in the community college through vocational certificate programs, but, by and large, students are not finding their way to these paths when they exit the remedial sequence without completing it (Bahr, 2012b).

Of course, the study described here was not the first to cast questions about remedial education in the community college in terms of process rather than outcome. Bailey, Jeong, and Cho (2010) and Bahr (2009) also have conducted research on the remedial process. However, the study described here is one of the few published studies that analyzed the individual steps of the remedial process and the constituent behaviors of these steps in such detail, and the findings in this respect are uniquely informative. More importantly for this essay, though, it illustrates the degree of deconstruction of students' behavior that can be accomplished through a careful analysis of transcript-level data and, further, the value of that deconstructive effort for understanding how students' behavior unfolds between college entry and eventual academic outcome, whether favorable or unfavorable.

Other Quantitative Examples of the Deconstructive Approach

The question, then, is whether this approach could be translated to other outcomes, such as credential completion and upward transfer. The answer is unequivocally affirmative, as evidenced by the limited-but-growing interest in this approach. For example, rather than focusing on the outcome of upward transfer, Hagedorn, Moon, Cypers, Maxwell, and Lester (2006) focused on the successive completion of the modules of the Intersegmental General Education Transfer Curriculum by community college students in a large, urban community college district. The authors argued that the historical focus on transfer as a discrete outcome neglects the fact that transfer is a process and, moreover, introduces an implicit assumption that

"transfer is orderly and linear" (p. 227) – an assumption that is demonstrably false.

Other important and illustrative work includes Calcagno, Crosta, Bailey, and Jenkins (2007b) research on community college students' *milestones* on the path to a degree, defined in terms of thresholds of percentage of program completed, thresholds of earned credits, and passing college-level math and writing courses. Roksa and Calcagno (2010) extended this work on milestones to understand transfer to four-year institutions by community college students, though the authors' conclusions imply that even finer distinctions of process and progress may be needed (i.e., the milestones may be still too granular). Such finer distinctions could be achieved by "drilling down" even further to the level of students' course-taking behavior, as was done by Bahr (2012b) in his study of students' course-taking behavior before and after exiting the remedial math sequence, which was motivated by a question about why students who do not complete the remedial math sequence so rarely find their way to a credential path that does not require college-level math competency (e.g., a vocational certificate program).

A related body of work has begun to describe the larger course-taking trajectories of students and the relationships between these trajectories and students' outcomes (Bahr, 2010c, 2011; Marti, 2008; Zeidenberg & Scott, 2011). Though this work is still in its infancy, it is a useful approach to articulating the behavioral mechanisms that link distal student characteristics to eventual outcomes, which, in turn, will provide the detailed information needed to design interventions and adjust institutional policies and practices to improve students' outcomes.

The Need for *Qualitative* Deconstructive Research

Quantitatively-oriented deconstructive research holds great promise for describing students' pathways, discerning the relationships between pathways and outcomes, identifying when and where in the course of students' academic careers they encounter obstacles, and

understanding students' efforts to navigate those obstacles. In other words, it is very effective at answering questions about *how* students' trajectories unfold, which is sorely needed at this time. However, this type of research cannot answer with any certainty the *why* questions, namely *why* students exhibit the behaviors that they do. For example, though my study (Bahr, 2012a) provided solid evidence of the enormous negative impact of even one non-passing grade at any point in the remedial sequence, the reason why the impact is so large is not at all clear. Why do students who have passed all remedial courses to-date drop out of the remedial sequence after a single non-passing grade, while continuing to attend college and take other courses? Answering questions of this type – the *why* questions – is no less important than is answering the *how* questions, but it will require a different approach, specifically a qualitatively-oriented approach.

Unfortunately, the fraction of research on community college students that is qualitative is nature is distressingly small, and only a portion of that work can be considered mutually informative with respect to the much larger body of quantitative work. In fact, it would not be an overstatement to say that the cyclical analytical process whereby quantitative research informs qualitative research, which informs quantitative research, and so on, is largely broken with respect to research on community college students. Yet, the richness of qualitative data and analyses is essential for making sense of the many ambiguous findings that arise in quantitative research of all types, including deconstructive quantitative research. In the absence of such qualitative work, quantitative researchers generally are left to speculate about the reasons and "causes" of observed associations, and this speculation is carried over into proposed solutions and interventions. Case in point, concerning the finding discussed above, I recommended "automatic and immediate institutional interventions" (Bahr, 2012a, p. 688) following the first-attempt failure of any remedial course in math or writing, which seems a safe bet. However, it

surely also is the case that the effectiveness of such an intervention is dependent upon the form that it takes, and, without knowledge of why students respond as they do to a first-attempt failure, one would not know what form the intervention *should* take.

Despite the global dearth of qualitative research on community college students, there are a number of excellent examples of this type of work. Rosenbaum, Deil-Amen, and Person (2009) and Deil-Amen and Rosenbaum (2002) provided insights into the interaction of institutional structure and student behavior that simply could not have been obtained through quantitative methods alone. Likewise, Cox's (2009a, 2009b, 2009c) work has advanced understanding of how students' subjective experience of the community college shapes their decision-making and behavior. Grubb's (2010) observational study provided a perspective on the remedial classroom that explains findings that have troubled quantitative researchers for years. Other important studies (e.g., Bensimon & Dowd, 2009; Townsend & Wilson, 2006) could be mentioned as well, but the point here is that qualitative research provides a critical piece of the puzzle that quantitative research simply is unable to provide.

Thus, a complete deconstructive agenda for given topic requires quantitative researchers to work in concert with qualitative researchers to understand how and why students' behavior unfolds as it does between college entry and exit. That is, qualitative research must be "mapped" systematically to the quantitative research to address ambiguous quantitative findings, and quantitative research must be "mapped" systematically to qualitative research to test the generalizability of the qualitative conclusions. Though the two types of research need not be conducted simultaneously, or even by the same researchers, it is important that they be designed to speak to the same research question and, moreover, to the particular findings about which the corresponding study is unable to speak clearly. Only in cooperation will a thorough

understanding of students' pathways, course-taking behaviors, and enrollment patterns emerge.

The Current Trend *Away* from Deconstructive Research

Although the volume of deconstructive research is fairly limited at this juncture, the recognition of the need for it is growing. For example, with the goal of understanding the role of community colleges in preparing Latino/a students for baccalaureate degrees in science, technology, engineering, and mathematics, Malcolm (2010) argued for the need to use detailed transcript-level analyses to identify curricular points of entry and exit and to map common course-taking patterns. Further, she contended that "institutional researchers are uniquely positioned to employ qualitative methods to understand factors that lead students to select certain pathways" (p. 37). Thus, we find here a marriage of the quantitative and qualitative facets of deconstructive research, which is echoed by Voorhees, Smith, and Luan (2006), who advocated the need for community colleges to "identify key transition points" in their students' academic careers and to improve understanding of students' motivations (p. 186).

Yet, despite the obvious gap in our knowledge about what actually is happening with regard to students' pathways through the community college, and despite the slowly-growing interest in deconstructive research, the larger trend in research on community college students and their outcomes appears to be pointed elsewhere. As one community college researcher described it in a characteristic tongue-in-cheek style, the field is moving in the direction of "new/better ways to answer old questions" (Name Withheld, Personal Communication, 2011). For example, there has been a proliferation in the last few years of studies designed to determine whether community colleges help or hinder students' attainment (e.g., Leigh & Gill, 2003; Long & Kurlaender, 2009; Melguizo & Dowd, 2009; Reynolds & DesJardins, 2009; Sandy, Gonzalez & Hilmer, 2006), which is a question that may be traced to Clark's (1960) work on the "cooling

out" phenomenon in community colleges and Karabel's (1972) thesis concerning the diversionary role of community colleges.[3] Though varying in the particulars, all of these studies share essentially the same core question and are distinguished from prior work by progressively more sophisticated and complex analytical methods.

Obviously, this is a very important question: one that is of great scientific interest and great interest for the larger policy discourse as well. In addition, there is considerable value in the development of improved quantitative methodologies. However, regardless of the answer to the question, few would argue that the rates at which community college students graduate, transfer to four-year institutions, and complete baccalaureate degrees are at the level that they could be or, perhaps, should be. Though the answer to the question is important to make a case for why change is needed, it can provide comparatively little information about when and where in the course of students' academic careers they are encountering barriers or obstacles to their progress, why students make the productive or unproductive decisions that they do, and how to craft interventions or adjust institutional policies and practices to improve community college students' success. Thus, I would urge thoughtfulness about this trend in research on community college students and their outcomes, and consideration of whether the direction in which the research appears to be moving ultimately will produce the results that are desired and sought.

CONCLUSION

Given how much we know about the associations between community college students' characteristics and their outcomes, it is remarkable how little we know about the behavioral mechanisms – the pathways, course-taking behaviors, and enrollment patterns – that connect characteristics to outcomes. This sizeable "blind spot" constitutes a significant hindrance to our

[3] To be clear, the question posed by Reynolds and DesJardins (2009) was intended primarily to illustrate the analytical methods that were the focus of their work.

capacity to influence those outcomes. Of course, it is the hallmark of an academic paper to recommend more research, and I would be remiss in my duties to do otherwise. However, I recommend not just more research but different research, particularly deconstructive research that will illuminate the *how* and *why* of students' pathways though the community college. It is research of this sort that will reveal the links between students' characteristics and their eventual outcomes and illuminate productive directions to improve those outcomes through interventions and changes to institutional policies and practices.

REFERENCES

Alfonso, M., Bailey, T. R., & Scott, M. (2005). The educational outcomes of occupational sub-baccalaureate students: Evidence from the 1990s. *Economics of Education Review, 24*, 197-212.

Bahr, P. R. (2009). Educational attainment as process: Using hierarchical discrete-time event history analysis to model rate of progress. *Research in Higher Education, 50*, 691-714.

Bahr, P. R. (2010a). Preparing the underprepared: An analysis of racial disparities in postsecondary mathematics remediation. *Journal of Higher Education, 81*, 209-237.

Bahr, P. R. (2010b). Making sense of disparities in mathematics remediation: What is the role of student retention? *Journal of College Student Retention, 12*, 25-49.

Bahr, P. R. (2010c). The bird's eye view of community colleges: A behavioral typology of first-time students based on cluster analytic classification. *Research in Higher Education, 51*, 724-749.

Bahr, P. R. (2011). A typology of students' usage of the community college. *New Directions for Institutional Research, S1*, 33-48.

Bahr, P. R. (2012a). Deconstructing remediation in community colleges: Exploring associations

between course-taking patterns, course outcomes, and attrition from the remedial math and remedial writing sequences. *Research in Higher Education*, *53*, 661-693.

Bahr, P. R. (2012b). *The aftermath of remedial math: Investigating the low rate of certificate completion among remedial math students*. Center for the Study of Higher and Postsecondary Education, University of Michigan, Ann Arbor, Michigan.

Bailey, T., Jeong, D. W., & Cho, S. W. (2010). Referral, enrollment, and completion in developmental education sequences in community colleges. *Economics of Education Review*, *29*, 255-270.

Bensimon, E. M., & Dowd, A. (2009). Dimensions of the transfer choice gap: Experiences of Latina and Latino students who navigated transfer pathways. *Harvard Education Review*, *79*, 632-658.

Calcagno, J. C., Crosta, P., Bailey, T., & Jenkins, D. (2007a). Does age of entrance affect community college completion probabilities?: Evidence from a discrete-time hazard model. *Educational Evaluation and Policy Analysis*, *29*, 218-235.

Calcagno, J. C., Crosta, P., Bailey, T., & Jenkins, D. (2007b). Stepping stones to a degree: The impact of enrollment pathways and milestones on community college student outcomes. *Research in Higher Education*, *48*, 775-801.

Clark, B. R. (1960). The ‘cooling-out’ function in higher education. *American Journal of Sociology*, *65*, 569-576.

Cox, R. D. (2009a). ‘I would have rather paid for a class I wanted to take’: Utilitarian approaches at a community college. *Review of Higher Education*, *32*, 353-382.

Cox, R. D. (2009b). ‘It was just that I was afraid’: Promoting success by addressing students’ fear of failure. *Community College Review*, *37*, 52-80.

Cox, R. D. (2009c). *The college fear factor: How students and professors misunderstand one another*. Cambridge, Massachusetts: Harvard University Press.

Deil-Amen, R., & Rosenbaum, J. E. (2002). The unintended consequences of stigma-free remediation. *Sociology of Education*, *75*, 249-268.

Dougherty, K. J., & Kienzl, G. S. (2006). It's not enough to get through the open door: Inequalities by social background in transfer from community colleges to four-year colleges. *Teachers College Record*, *108*, 452-487.

Ewell, P., & Boeke, M. (2007). *Critical connections: Linking states' unit record systems to track student progress*. Lumina Foundation for Education. Retrieved from http://www.luminafoundation.org/publications/Critical_Connections_Web.pdf.

Ewell, P., & Jenkins, D. (2008). Using state student unit record data to increase community college student success. *New Directions for Community Colleges*, *143*, 71-81.

Grubb, W. N. (2010). *The quandaries of basic skills in community colleges: Views from the classroom*. National Center for Postsecondary Research. Retrieved from http://www.postsecondaryresearch.org/conference/PDF/NCPR_Panel4_GrubbPaper.pdf.

Hagedorn, L. S., & Kress, A. M. (2008). Using transcripts in analyses: Directions and opportunities. *New Directions for Community Colleges*, *143*, 7-17.

Hagedorn, L. S., Moon, H. S., Cypers, S., Maxwell, W. E., & Lester, J. (2006). Transfer between community colleges and 4-year colleges: The all-American game. *Community College Journal of Research and Practice*, *30*, 223-242.

Karabel, J. (1972) Community colleges and social stratification. *Harvard Educational Review*, *42*, 521-562.

Leinbach, D. T., & Jenkins, D. (2008). *Using longitudinal data to increase community college*

student success: A guide to measuring milestone and momentum point attainment (CCRC Research Tools, No. 2). Community College Research Center, Teachers College, Columbia University.

Leigh, D. E., & Gill, A. M. (2003). Do community colleges really divert students from earning bachelor's degrees? *Economics of Education Review*, *22*, 23-30.

Long, B. T., & Kurlaender, M. (2009). Do community colleges provide a viable pathway to a baccalaureate degree? *Educational Evaluation and Policy Analysis*, *31*, 30-53.

Malcolm, L. E. (2010) Charting the pathways to STEM for Latina/o students: The role of community colleges. *New Directions for Institutional Research*, *148*, 29-40.

Marti, C. N. (2008). Latent postsecondary persistence pathways: Educational pathways in American two-year colleges. *Research in Higher Education*, *49*, 317-336.

Melguizo, T., & Dowd, A. C. (2009). Baccalaureate success of transfers and rising 4-year college juniors. *Teachers College Record*, *111*, 55-89.

Moore, C., & Shulock, N. (2011). *Sense of direction: The importance of helping community college students select and enter a program of study*. Institute of Higher Education Leadership & Policy, California State University, Sacramento, California.

Mourad, R., & Hong, J. (2008). Application of survival analysis to study timing and probability of outcome attainment by a community college student cohort. *Journal of Applied Research in the Community College*, *16*, 22-31.

Reynolds, C. L., & DesJardins, S. (2009). The use of matching methods in higher education research: Answering whether attending at a 2-year institution results in differences in educational attainment. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research, volume 24* (p. 47-97). Dordrecht, Netherlands: Springer.

Roksa, J., & Calcagno, J. C. (2010). Catching up in community colleges: Academic preparation and transfer to four-year institutions. *Teachers College Records*, *112*, 260-288.

Rosenbaum, J. E., Deil-Amen, R., & Person, A. E. (2009). *After admission: From college access to college success*. New York, New York: Russell Sage Foundation.

Sandy, J., Gonzalez, A., & Hilmer, M. J. (2006). Alternative paths to college completion: Effect of attending a 2-year school on the probability of completing a 4-year degree. *Economics of Education Review*, *25*, 463-471.

Scott-Clayton, J. (2011). *The shapeless river: Does a lack of structure inhibit students' progress at community colleges? (CCRC Working Paper, No. 25)*. Community College Research Center, Teachers College, Columbia University.

Townsend, B. K., & Wilson, K. (2006). 'A hand hold for a little bit': Factors facilitating the success of community college transfer students to a large research university. *Journal of College Student Development*, *47*, 439-456.

Voorhees, R. A., Smith, G. P., & Luan, J. (2006). Researching student transitions. *Journal of Applied Research in the Community College*, *13*, 177-188.

Wang, X. (2009). Baccalaureate attainment and college persistence of community college transfer students at four-year institutions. *Research in Higher Education*, *50*, 570-588.

Zeidenberg, M., & Scott, M. (2011). *The context of their coursework: Understanding course-taking patterns at community colleges by clustering student transcripts*. Community College Research Center, Teachers College, Columbia University.