

**The Shapeless River:  
Does a Lack of Structure  
Inhibit Students' Progress at Community Colleges?**

Judith Scott-Clayton

January 2011

**CCRC Working Paper No. 25**

**A WORKING PAPER IN THE CCRC ASSESSMENT OF EVIDENCE SERIES**

Across the first year of a major grant from the Bill & Melinda Gates Foundation, with supplemental funding from Lumina Foundation for Education, CCRC has gathered and synthesized a large body of research evidence regarding strategies that may improve the success of students who attend community college. Working papers in the *Assessment of Evidence Series* use the research literature to draw conclusions and provide evidence-based recommendations in eight major topic areas: developmental assessment, developmental acceleration, developmental mathematics pedagogy, contextualization of basic skills instruction, online learning, non-academic support, institutional and program structure, and organizational improvement. All the papers in the series are made available on CCRC's website (<http://ccrc.tc.columbia.edu>) as they are released.

*Address correspondence to:*

Judith Scott-Clayton  
Assistant Professor of Economics and Education and  
Senior Research Associate, Community College Research Center  
Teachers College, Columbia University  
525 West 120<sup>th</sup> Street, Box 174  
New York, NY 10027  
212-678-3091  
Email: [scott-clayton@tc.columbia.edu](mailto:scott-clayton@tc.columbia.edu)

This research was funded by the Bill & Melinda Gates Foundation. The author gratefully acknowledges helpful comments provided by Brigitte Madrian and Bridget Terry Long on initial drafts. Leila Brandt and Katia Herrera provided expert research assistance.

## Abstract

For many students at community colleges, finding a path to degree completion is the equivalent of navigating a shapeless river on a dark night. While academic preparation and financial supports are critical components of student success, subtle institutional features may also play an important role. This paper thus reviews the evidence for what is called the *structure hypothesis: that community college students will be more likely to persist and succeed in programs that are tightly and consciously structured, with relatively little room for individuals to unintentionally deviate from paths toward completion, and with limited bureaucratic obstacles for students to circumnavigate*. This review of the literature inside and outside of higher education suggests that the lack of structure in many community colleges is likely to result in less-than-optimal decisions by students about whether and how to persist toward a credential. Though there is no silver-bullet intervention to address this problem, this paper highlights several promising programs and suggests directions for future experimentation and research.

## Table of Contents

<b>1. Introduction.....</b>	<b>1</b>
<b>2. The Decision Context: What Must a Student Do to Navigate College?.....</b>	<b>3</b>
2.1 Deciding What to Do .....	3
2.2 Planning How to Do It .....	4
2.3 Following Through .....	6
2.4 Resources for Students Along the Way .....	7
<b>3. Theory and Evidence on Choice and Complexity: Is This Decision Context a Problem? .....</b>	<b>8</b>
3.1 Universal Human Limitations: Bounded Rationality and Bounded Self-Control ...	9
Bounded rationality.....	9
Bounded self-control.....	10
Consequences.....	11
Aggravating factors.....	12
3.2 Relationship of Structure and Complexity to Inequality .....	13
<b>4. Evidence on Potential Solutions.....</b>	<b>15</b>
4.1 Improving Information Access and Navigation.....	16
More intensive advising.....	16
Use of technology to streamline bureaucracy.....	16
4.2 Learning Communities and Other Integrated Curricula .....	18
Learning communities.....	18
Washington State’s I-BEST program.....	19
4.3 Lessons from K-12 Curriculum Design.....	20
Instructional program coherence.....	20
Constrained curriculum.....	20
4.4 Radical Organizational Change:	
Comparing Private Versus Public Two-Year Institutions .....	21
Differences in graduation rates.....	22
Differences in organizational procedures.....	23
<b>5. Conclusions and Future Directions .....</b>	<b>25</b>
<b>References.....</b>	<b>27</b>



“You’ve got to know the shape of the river perfectly. It is all there is left to steer by on a very dark night....”

I was appalled; it was a villainous night for blackness, we were in a particularly wide and blind part of the river, where there was no shape or substance to anything, and it seemed incredible that Mr. Bixby should have left that poor fellow to kill the boat trying to figure out where he was....

– Mark Twain, *Life on the Mississippi* (1883)

## 1. Introduction

Out of 100 students entering a community college for the first time, only 15 will complete a degree or certificate within three years, while 45 will leave school without completing a credential (National Center for Education Statistics, 2008, Table SA-25). There are many reasons for low rates of degree completion at community colleges, and in search of potential solutions, researchers and policymakers have appropriately focused on obvious targets such as improving students’ academic preparation (through remediation, high school outreach, and dual enrollment programs) and strengthening their financial supports (through subsidized tuition, Pell Grants, and other forms of financial aid).

A less obvious but potentially equally important determinant of student success is the structure, or lack thereof, of student pathways from initial entry through completion. For many students at community colleges, finding a path to degree completion is the equivalent of navigating a river on a dark night. And as the above quotation illustrates, navigation is particularly difficult when the path is wide, blind, and lacking in shape or substance. Without signposts, without a guide, without a visible shoreline to follow, many students make false starts, take wrong turns, and hit unexpected obstacles, while others simply “kill the boat” trying to figure out where they are.

This paper sets forth an argument for the *structure hypothesis*: that community college students will be more likely to persist and succeed in programs that are tightly and consciously structured, with relatively little room for individuals to deviate on a whim—or even unintentionally—from paths toward completion, and with limited bureaucratic obstacles for students to circumnavigate. The lineage of this hypothesis can be traced back in part to Tinto’s seminal work on student persistence (1993), which

recognized that the dropout phenomenon is not solely an individual failure but also an institutional one. In the community college context, this hypothesis has been prominently raised in recent years by Rosenbaum, Deil-Amen, and Person (hereafter referred to as RDP, 2006) who examine differences in “organizational procedures” between public and private two-year institutions in their book *After Admission*.

While perhaps narrower than Tinto’s idea that school should support “integrative interactions,” the definition of structure used in this paper is broadened from RDP’s (2006) construct to include not only explicit institutional policies and procedures, but also norms and nudges that may more subtly influence individuals’ decisions at a point of action. This broad definition is influenced by the concept of choice architecture, or the way in which choices are structured and presented. Just as physical architecture influences our physical movements, choice architecture influences how we navigate complex decisions (Thaler & Sunstein, 2008).

Providing students with more structured paths to graduation is not without tradeoffs, particularly if “more structure” is taken to imply “less choice and flexibility.”<sup>1</sup> A broad range of services and program options, combined with flexible course scheduling options, is what makes college attractive and feasible for many students. There is a risk that while streamlined programs, policies, and procedures may improve the college experience for some students, it may unintentionally push others out. Because the consequences of increased structure are not always obvious, empirical research is essential to moving the debate forward.

This paper reviews prior research, but it is not a meta-analysis. Very few studies have explicitly examined the role of structure in student persistence, though any intervention may have structural features worth examining. Instead, I aim to integrate previously disconnected evidence and to inject into the conversation ideas from behavioral economics and psychology that have been under-applied in higher education. I will evaluate substantive findings from both inside and outside higher education, as well as review the state of the research evidence in general. This review is intended to provoke discussion rather than serve as a final word.

---

<sup>1</sup> Strategies for increasing structure without restricting choice will be among those considered in this review.

I begin with a brief description of the *decision context* facing community college students—what do they have to do in order to successfully navigate to completion? I then introduce several concepts from the behavioral economics and psychology literature to examine how the structure of a decision-making process may influence students’ choices, with special attention paid to the role of structure in ameliorating or exacerbating educational inequality. I move on to discuss the evidence regarding potential structure-based solutions, and finally conclude with suggestions for future research and practice.

## **2. The Decision Context: What Must a Student Do to Navigate College?**

In order to successfully navigate college, students at some point must determine what they want to do, plan how to do it, and then follow through on these plans. We know that students do not always go through these stages in an organized, sequential fashion, and students often may change their minds and have to start again from the beginning. Thus, this section describes not what actually happens but rather what needs to happen at some point if students are to ultimately navigate college successfully—and it is illustrated with qualitative evidence regarding how students often depart from this idealized process.

### **2.1 Deciding What to Do**

An important first step in the pursuit of a postsecondary credential is to decide what credential to pursue. Yet incoming students often lack well-defined, pre-established preferences, as illustrated by the following excerpt from a qualitative study by MDRC (Gardenhire-Crooks, Collado, & Ray, 2006):

Once they decided to go to college, some students were starting from scratch in determining their academic goals and what they wanted from college, as this somewhat older bluecollar father revealed: “I’m illiterate as far as college; I just always wanted to come back to school.” This same student highlighted how basic the guidance he needed might be: “I didn’t know what (I was in college) for. Even now I don’t know what I want to take up.” (p. 16)

The abundance of program options offered by the typical community college may be particularly appealing to these undecided students; at the same time, it also may serve to perpetuate their indecision.

As noted by Goldin and Katz (2008), a high degree of choice and flexibility are two of the defining features of the U.S. educational system, particularly in higher education: “No nation in the world offers as much choice to potential undergraduates ... as does the United States” (p. 254). And the comprehensive community college is perhaps the most diverse type of institution in this diverse postsecondary system. The typical community college serves multiple functions—preparing students to transfer to baccalaureate programs, offering associate degrees in both academic and occupational subjects, providing adult basic education and remedial instruction, providing occupational training and certification, and providing continuing education and recreational courses. Students may have literally hundreds of programs to choose from. Macomb Community College in Michigan, for example, offers nearly 200 degree and certificate programs ranging from History to Nursing to Mechatronics.<sup>2</sup>

Whatever their deficiencies may be, community colleges cannot be criticized for offering a dearth of options. Or can they? As RDP (2006) conclude, “Although community colleges offer many choices, we find that they rarely offer one: highly structured programs that curtail choice but promise timely graduation and an appropriate job” (p. 21). Cohen and Brawer (2008) note that the variety of programming offered by the typical comprehensive community college is virtually unique to the United States, perhaps because compared to the citizens of other countries, “Americans seem more determined to allow individual options to remain open for as long as each person’s motivations and the community’s budget allow” (p. 27).

## **2.2 Planning How to Do It**

Previous studies have noted the complexity of choosing the right school (e.g., Avery & Hoxby, 2004), and several websites attempt to help students navigate that

---

<sup>2</sup> For a complete list, see <http://www.macomb.edu/Current+Students/Educational+Offerings/Areas+of+Study.htm>



decision.<sup>3</sup> But even after choosing a school and program, consider the complexity of the additional decisions students must make. They must choose how many courses to take and when to take them, based on course descriptions that may provide only partial information about course content and difficulty, and program descriptions that provide little guidance about which courses should be taken when. On top of this, students may have to make tradeoffs depending upon the vagaries of class schedules and work schedules. Logistically, just obtaining all of the information needed to make wise course choices can be difficult. Information about course content and prerequisites is often located in one place, while course schedules are in another place, and the requirements for specific degree programs are spelled out in yet another location.

Moreover, unlike the typical elite four-year institution, where courses all typically cost the same and count the same, at the typical community college (and many public four-year institutions), “all credits are not created equal” (RDP, 2006, p. 77). Students may be surprised to find that enrolling at a college does not necessarily imply that they can take college courses. More than half of entering community college students are assigned to “developmental” coursework in at least one subject (Bailey, Jeong, & Cho, 2010; Bailey, 2009). Developmental credits may qualify a student for financial aid, but may not count as “degree credits” toward graduation; or, a college-credit bearing course may count toward general graduation requirements but not program-specific requirements. A common problem in community colleges is that even courses that count toward specific program requirements for a two-year degree may not be transferable if the student decides to continue at a four-year institution (RDP 2006, pp. 77–83). Finally, community colleges may offer credit and noncredit programs in related fields (e.g., Nursing and Nursing Assistant programs), in which the noncredit program may cost as much or even more per term, but which may result in only a certificate of completion that is not applicable toward an academic credential should the student decide to switch programs.

Ideally, students should consider how their course choices this term will alter the set of choices for the following term, but at many institutions it is difficult to confirm in

---

<sup>3</sup> For example, The College Board’s College MatchMaker ([http://collegesearch.collegeboard.com/search/adv\\_typeofschool.jsp](http://collegesearch.collegeboard.com/search/adv_typeofschool.jsp)) and the U.S. Department of Education’s College Navigator (<http://nces.ed.gov/COLLEGENAVIGATOR/>)

advance what courses will be offered in a future semester. Thus, term after term, this complex decision process must be repeated. Successfully navigating a single semester is no guarantee of smooth sailing in subsequent semesters.

### **2.3 Following Through**

Even if a conscientious plan is made, students may encounter bureaucratic hurdles and unexpected obstacles that throw them off course. As Tinto (1993) has written, “[E]arly withdrawal from college need not always imply a lack of commitment or the absence of intention.... Lest we forget, most new students are teenagers who have had precious little chance to live on their own and attend to the many challenging issues of adult life. For them, college is as much a social testing ground as an academic one” (p. 47).

One of the first tests students encounter is the financial aid application process. The Free Application for Federal Student Aid (FAFSA) is, for many students, longer and more complicated than their income tax return (Dynarski & Scott-Clayton, 2006).<sup>4</sup> Federal student aid information, packaging, verification, and disbursement is administered primarily by the institutions themselves, which may not have the staff to provide each student with patient, individualized attention. As RDP (2006) find in their qualitative study, “Students who apply for financial aid complain about the difficulty of the forms, and the lack of assistance at these colleges. Unfortunately, many students faced unpleasant and even hostile encounters with financial aid staff in their attempts to complete the financial aid process” (p. 117).

This intimidating form and—for a federally mandated 30% (minimum) of applicants—the subsequent aid application verification process appears to be a significant impediment to both aid access and enrollment. A recent study found that aid access and college enrollments both increased among prospective students who were randomly assigned to receive assistance with completing and submitting a FAFSA (Bettinger, Long, Oreopoulos, & Sanbonmatsu, 2009).

---

<sup>4</sup> Since 2006 several efforts have been made to simplify the FAFSA, including eliminating unnecessary questions entirely and improving the online application so that students can skip questions which are not relevant for them. However, even those applying online are encouraged to fill out a worksheet that is longer and more complicated than an IRS 1040EZ, the tax form many students are eligible to use.

The course registration process may be equally or more frustrating. While students at some schools may be able to register online, other institutions still hold “grueling registration ordeal[s]” involving long lines, crowds, and confusion (RDP, 2006, p. 117). Students who arrive at (or log into) course registration with a specific plan in hand may find that their preferred courses are already full. One student interviewed by RDP reported: “I wanted a math class, but they said the math classes were too full. ... I didn’t really need the reading though because they said I scored high and I didn’t need the reading. I just took it anyway because they didn’t have math” (p. 78). Even a single unavailable course can disturb the student’s entire carefully balanced schedule, not only for the current term but for future terms as well.

Finally, even after successfully registering and beginning coursework, a student may encounter unexpected obstacles along the way. Financial aid may be delayed. A course may be more difficult than expected, or not difficult enough, but it may be too late to gain access to an appropriate course. A student may fail a placement exam (which are often, but not always, administered prior to registration). At each of these points, the student will need to make some active adjustments to get back on track, and with every active adjustment that is required, the risk increases that on their own some students simply won’t react quickly enough. A problem encountered in one semester may reverberate or even amplify into future semesters, or the student may simply drop out.

## **2.4 Resources for Students Along the Way**

While the specific resources available to help students through these three stages will vary from school to school, the level of assistance that can be provided by advisors and counselors is limited by extraordinarily high caseloads, which average one advisor/counselor for every 800 to 1200 students (RDP, 2009, p. 121; Grubb, 2006). A national survey of entering community college students found that less than a quarter of students were assigned a specific person that they could contact for information or assistance, and less than half reported that any college staff (besides instructors) knew their names (Center for Community College Student Engagement, 2009).

The advising that does take place is often by necessity focused on mechanics of course registration, rather than bigger questions about goals. As O’Banion (1972,

reprinted 1994) states: “It is assumed that students have already made choices regarding life goals and vocational goals when they enter the college—a questionable assumption for college students in general and a harmful assumption for community college students in particular” (p. 83). Even schools that recognize their role in guiding students to career decisions may have virtually no career counseling (Grubb, 2006, p. 197).

In some decision contexts, family and peer networks may compensate for a lack of formal guidance. But because the students at community colleges are disproportionately first-generation college-goers, many from minority and/or low-income families, they may be less able to glean information from the experiences of their family and friends (Bailey, Jenkins, & Leinbach, 2005). Moreover, information may not circulate very well among classmates, because no two students are likely to be following the same exact path, campuses are generally non-residential, and many students attend part time and often intermittently (skipping terms).

Finally, community college advising systems often rely on students proactively seeking assistance. Poor institutional data systems may limit advisors’ ability to detect and track struggling students; the school may not know a student has encountered a problem until a semester or more after that student is gone.

### **3. Theory and Evidence on Choice and Complexity: Is This Decision Context a Problem?**

Usually, we think of choice as a good thing; in fact, classical economic theory implies that more choice can *never* be a bad thing. An abundance of choice usually develops for a reason: to serve a diversity of preferences. A plethora of postsecondary program options may improve individual welfare by providing individually-tailored alternatives, enabling students with diverse backgrounds, preparation, interests, and constraints to match with similarly diverse programs and attendance schedules. Indeed, this wide variety of alternatives has been central to the rise of open-access community colleges, which Cohen and Brawer (2008) attribute to the characteristically American belief “that all individuals should have the opportunity to rise to their greatest potential. Accordingly, all barriers to individual development should be broken down” (p. 11).

Psychological evidence also suggests that choice can strengthen individuals' intrinsic motivation and sense of self-determination, as well as improve subjective evaluations of decision outcomes (see review by Botti & Iyengar, 2006). Postsecondary education without choice might begin to feel much like high school, and for many students this resemblance may be de-motivating.

Recent work in psychology, marketing, and behavioral economics, however, presents compelling evidence that more choice is not always better. In this section, I review some of the findings from this literature and explain how they may relate to students' decision-making in the community college context. I then discuss the critical implications of these findings for inequality in educational experiences and outcomes.

### **3.1 Universal Human Limitations: Bounded Rationality and Bounded Self-Control**

If you look at economics textbooks, you will learn that homo economicus can think like Albert Einstein, store as much memory as IBM's Big Blue, and exercise the willpower of Mahatma Gandhi. Really. But the folks that we know are not like that. ... They are not homo economicus; they are homo sapiens. (Thaler & Sunstein, 2008, pp. 6–7)

**Bounded rationality.** As asserted in the above quotation, humans are not choice-making machines but rather function with “bounded rationality,” a phrase first coined by Herbert Simon (1976). For example, humans do not appear to hold stable and complete preferences as rational-choice theory requires. The theory does not require that preferences never change, but at any given point in time, individuals ought to be able to say whether option A or option B is preferred, and this preference should not be influenced by clearly irrelevant factors, such as the presence of a third alternative which is not preferred to either A or B. Experimental evidence suggests, however, that “irrelevant” contextual factors often do influence choices. For example, students given a choice between an elegant pen and \$6 cash chose the elegant pen only 36% of the time, but a second group of students who were offered a cheap pen, an elegant pen, or \$6 chose the elegant pen 46% of the time (Tversky & Simonson, 1993). In a field experiment, men were much more likely to take up an identical loan when the loan offer letter included a woman's picture instead of a man's (Bertrand, Karlan, Mullainathan, Shafir, & Zinman, 2005). This evidence suggests that “preferences are actually constructed—not merely

revealed—during their elicitation” (Bertrand et al., 2005, p. 30). The implication for higher education is that students’ choices between programs of study or courses within programs may be highly dependent upon how these choices are structured and presented.

Another aspect of bounded rationality is pure cognitive overload. When it comes to complex, high-stakes financial decisions with long-term implications, individuals may struggle to determine which factors are most important, to gather all of the relevant information on these factors, and to appropriately weight the costs and benefits of these factors in a final calculation. As anyone who has looked at a financial prospectus—or an academic catalog, for that matter—knows, simply *reading* all of the relevant information can be prohibitively time-consuming, let alone figuring out how to use that information appropriately. This cognitive overload may explain why people make significant mistakes in financial planning (Lusardi & Mitchell, 2007). Perhaps unsurprisingly, Agarwal, Driscoll, Gabaix, and Laibson (2008) find that, compared with the middle-aged, young adults are particularly likely to make financial mistakes (with respect to auto loans, credit cards, and mortgages), presumably because of their limited experience. Lusardi, Mitchell, and Curto (2010) find evidence that financial literacy is not only low among the young in general, but particularly low among youth from low-income families.

**Bounded self-control.** Even after deciding on the best course of action, individuals may have trouble following through if the decision involves trading current pain for future gain, especially when the former is concrete and certain, and the latter is ambiguous and uncertain. In economics this phenomenon is referred to as “time-inconsistent preferences” or “hyperbolic discounting”: in plain English, this means that individuals tend to have much more self-control when it comes to making future plans than they do when it comes to taking costly actions in the present (Laibson, 1997). Just as many people mentally commit every day to go to the gym *tomorrow*, students may delay taking important classes or may take a lighter than optimal load because they think they will be able to focus more on their studies *next term*. Individuals also may be averse to following through on a good decision when doing so means “locking in” some real or perceived loss—a phenomenon known as “regret aversion.” For example, even once an individual has decided which among several majors is preferred, she may hesitate to declare because of the potential regret associated with closing off other options. Finally,

“hassle factors” and negative interactions can also cause individuals to delay taking an action they know to be beneficial (Bertrand, Mullainathan, & Shafir, 2004), simply because of unpleasant associations. This may help explain the recent finding that many students put off taking required college-level math courses, even after completing a remedial sequence (Bailey, Jeong, & Cho, 2010).

**Consequences.** Bounded rationality and bounded self-control can lead to three potential problems: mistakes, delay, and dissatisfaction. First, individuals who are uninformed or overwhelmed with too much complicated information may make systematically biased decisions that are not in their best interest. Psychological and behavioral economic researchers have identified a number of decision-making heuristics and biases that individuals often resort to in the face of complexity. For example, Madrian and Shea (2001) find strong evidence of default bias (also called status quo bias) in a study of 401(k) enrollment procedures at a large U.S. corporation. When the corporation instituted a policy of automatically enrolling new hires in the 401(k) plan unless they actively opted out, participation immediately increased by about 50 percentage points. This indicates the large potential role for seemingly small differences in bureaucratic procedures.

In the community college context, the pathway from initial application to course enrollment requires numerous active decisions, where the default is simply not to enroll. In the face of confusion, students also may be unduly influenced by idiosyncratic factors such as whether a friend is enrolling in a particular program or course. This tendency to base decisions on easily accessible information is often referred to as “availability bias” (see, e.g., Tversky & Kahneman, 1974). In RDP’s (2006) qualitative study, 42% of community college students indicated that they did not have enough information about requirements and prerequisites; 26% were unsure which of their courses counted toward a degree (p. 104). Students also undertake surprisingly minimal search efforts regarding educational options, given their importance. Instead, they often resort to trial and error: Beggs, Bantham, and Taylor (2006) find in a qualitative study that “that very few participants mentioned having performed any type of information search in the process of choosing their major. Only one participant talked about using career planning tools” (p. 385). RDP describe students as pinballs “bouncing from one thing to another” (quoting a

community college administrator, p. 126), and Grubb (2006) similarly finds that students often “develop information by taking courses almost at random” (p. 197).

But program/course enrollment mistakes are neither the only nor even necessarily the most important adverse consequence when imperfect humans are confronted with unstructured, complex decision problems. A second potential problem is decision deferral. Greenleaf and Lehmann (1995) find that among other reasons, consumers delay decision-making when they are uncertain about the consequences of their actions, uncertain about how to identify and weigh the key attributes of alternative choices, and when they must wait on the advice of others. Moreover, consumers are more likely to defer decisions when the choices under consideration involve multi-dimensional tradeoffs (see, e.g., Tversky & Shafir, 1992; see also a brief review of the literature in Dhar & Nowlis, 1999, p. 370). Finally, individuals may be *more* likely to procrastinate on consequential goals than inconsequential ones, because of unrealistic planning: “A person might forgo completing an attractive option because she plans to complete a more attractive but never-to-be-completed option” (O’Donoghue & Rabin, 2001, p. 121). In higher education, we thus might be worried that some students, unsure about which courses to take, may simply never complete the registration process or, once they register, may delay decisions about degree concentration.

Finally, a third potential adverse consequence is dissatisfaction with the ultimate decision once it is made. Evidence from psychology and marketing suggests that consumers are less satisfied when they are uncertain about their final choice and when the decision involves highly consequential tradeoffs (Heitmann, Lehmann, & Herrmann, 2007; Botti & Iyengar, 2006). Moreover, satisfaction is positively related to customer loyalty and the likelihood of repeat purchases (Heitmann, Lehmann, & Herrmann, 2007). This marketing perspective complements Tinto’s (1993) model of student dropout, which he suggests is a consequence of student frustration and disengagement. Students who experienced an unpleasant decision process or who have lingering doubts about their choices may dread having to go through the process all over again the next semester.

**Aggravating factors.** Studies have identified a number of factors that increase the likelihood of decision problems. Passive choice, complexity, limited personal experience, third-party marketing, and inter-temporal choice (i.e., when choices have costs and



benefits across multiple time periods) are factors that make decision problems more likely (Beshears, Choi, Laibson, & Madrian, 2008). These factors increase the likelihood that individuals may not even have clear preferences (and thus may be more susceptible to default options or third-party marketing), or they may have clear preferences but simply have difficulty understanding the consequences and tradeoffs between all of their options, or they may have clear preferences and information, but simply have trouble sticking to their long-term plans (which often involve present sacrifice for future gain). Beshears et al. suggest that when these features are present, simply asking individuals for their self-reported preferences may be more informative than trying to infer preferences from observed choices.

One specific component of choice complexity that is strongly present in the higher education context is the concept of “non-alignable assortments.” Alignable choice assortments vary along a single dimension, such as digital cameras differing only in megapixels, or perhaps like a single course of study that offers either an accelerated one-year program, a regular two-year program, or a part-time three-year program. Non-alignable assortments vary along multiple dimensions, such as the choices between degree programs or between specific courses that vary in relevance to personal interests, relevance to future labor market success, timing, and difficulty. “Unlike alignable assortments, non-alignable assortments involve trade-offs *between* dimensions, such that obtaining one desirable feature entails giving up another desirable feature” (Gourville & Soman, 2005, p. 383). In other words, when options are complicated along multiple dimensions, they become very difficult to compare. While consumers seem to prefer having more choices when the assortment of choices is alignable, they tend to avoid brands and decisions when assortments are non-alignable (Gourville & Soman, 2005; Dhar & Nowlis, 1999).

### **3.2 Relationship of Structure and Complexity to Inequality**

The lack of structure at many community colleges may reinforce inequality, both because the choices they offer are more complicated and because the students they serve may be least equipped to navigate this complexity. First, given the “vast variety of students” that community colleges serve (Grubb, 2006), students at such institutions are

likely to face more choices and more complex choices than students enrolled at an elite four-year institution. For example, Harvard offers only full-time, residential bachelor's degree programs in 43 academic fields and requires all students to complete a core curriculum, while nearby Bunker Hill Community College offers 72 full-time or part-time associate degree or certificate programs in 63 academic and applied fields with no required core and with some courses available online. Thus, at a community college, any given student is relatively unlikely to be following exactly the same path as another—and even students who do follow the same path may be unlikely to know it. Moreover, schools serving low-income students are often disadvantaged themselves in terms of resources, thus explaining the high student-to-counselor ratio at community colleges.

Second, this unstructured complexity may be the most daunting for disadvantaged students—particularly first-generation college students—who may have limited access to college networks. Deil-Amen and Rosenbaum (2003) are among those who argue that lack of structure increases the importance of “social know-how” or “college knowledge,” which in turn tends to place already disadvantaged groups (low-income, minority, and first-generation college enrollees) at an even further disadvantage. Unable to ask a parent or older sibling who has already been through the process, these students are especially in need of effective guidance from the institution. Yet they may also have a smaller margin for error. As argued by Bertrand, Mullainathan, and Shafir (2006), “The poor may exhibit basic weaknesses and biases that are similar to those of people from other walks of life, except that in poverty, there are narrow margins for error, and the same behaviors often manifest themselves in more pronounced ways and can lead to worse outcomes” (p. 419). A student who experiences a delay in financial aid or who cannot get a course enrollment question answered prior to the registration deadline may simply drop out.

Finally, it is worth noting that the lack of structure at some institutions is not always an accident. Some institutions have philosophical objections to “intrusive advising” and restrictions on students' choices, believing that it is the student's job to be engaged and proactive in their education. For example, Fonte (1997) describes how some community colleges consciously eschew restrictive curricula and services in favor of a

laissez-faire approach.<sup>5</sup> One argument of the laissez-faire proponents is that external interference may crowd out students' intrinsic motivation, although there is evidence that even students who are "cajoled" into increasing their educational investment (e.g., via financial incentives for passing AP exams in high school) may, on accident, learn something and perform better even after incentives are removed (Jackson, 2010).

Interestingly, Fonte's description of restrictive versus laissez-faire institutional philosophies parallels the "concerted cultivation" versus "natural development" approaches that Lareau (2003) identifies in her qualitative study of class differences in child rearing. Lareau finds that low-income families are more likely to take a "hands off" approach to parenting. While Lareau does not pronounce one parenting style as better than another, she describes how the children of "natural development" parents were often more passive and less effective in their interactions with institutions such as schools and doctors. This description accords with the assessment of one community college dean of students, who reported that it is not "the natural tendency of these students to be aggressive, to be astute, self-directed, and all of those kinds of strategies that the successful student is able to do" (quoted in Grubb 2006, p. 199).

#### **4. Evidence on Potential Solutions**

The lack of structure in the community college experience encompasses several types of problems that could be addressed by a range of solutions, from very "light-touch" informational interventions, to moderately intensive interventions restructuring aspects of the curricula and student services, to drastically overhauling the entire institution. In general, the evidence presented thus far regarding the extent of the *problems* is much stronger and deeper than the evidence regarding potential *solutions*. Nevertheless, all of the potential structure-based solutions discussed below have at least suggestive evidence of positive effects.

---

<sup>5</sup> Interestingly, in the domain of financial planning, similar objections were raised early on regarding the perceived intrusiveness of automatic 401(k) enrollment policies, but these objections tended to fade as evidence accumulated on program effectiveness.

#### **4.1 Improving Information Access and Navigation**

**More intensive advising.** Perhaps the most straightforward approach to addressing the complexity of the community college experience is simply to enhance student advising. There is evidence that doing so improves student outcomes, as discussed by Melinda Mechur Karp (2011) in a companion paper in this series. Most campuses, however, do not have the resources to scale up intensive-advising programs across the entire campus; accordingly, such “high-touch” programs may be feasible only for targeted at-risk subsectors of the student population.

**Use of technology to streamline bureaucracy.** One implication of the choice-architecture approach is that big problems do not always require big solutions (Thaler & Sunstein, 2008). Small solutions, strategically conceived and implemented, can sometimes have disproportionate effects. A good example comes from a randomized evaluation conducted by Bettinger, Long, Oreopoulos, and Sanbonmatsu (2009) in conjunction with the tax preparer H&R Block. Individuals and families with college-age children who visited H&R Block to complete their income taxes were recruited for a randomized trial in which one treatment group was offered automated, but personalized information about financial aid eligibility (based on tax information they had already reported), a second treatment group additionally were offered the opportunity to have a Free Application for Federal Student Aid (FAFSA) pre-filled with financial information (which could then be completed by answering just a few additional questions) and submitted electronically, and the control group was offered only general information about the costs and benefits of college. The individuals who received both personalized information as well as the opportunity to pre-fill and electronically submit the FAFSA were substantially more likely to enroll in college (Bettinger, Long, Oreopoulos, & Sanbonmatsu, 2009). This raises the prospect that technological simplifications in other domains (such as course registration) might produce similarly dramatic results.

Community colleges present a particularly target-rich environment for technological innovations that could improve students’ access to and navigation of information about programs, courses, requirements, and prerequisites. For example, many college websites simply provide an alphabetical listing of program offerings, requiring students to click into each one to see what it involves, and making it difficult to compare

substantively related programs. This may quickly frustrate students accustomed to the sophisticated search tools of online retailers like Amazon and Netflix. Consider these examples provided by Thaler and Sunstein (2008):

As choices become more numerous, though, good choice architecture will provide structure, and structure will affect outcomes. Consider the example of a paint store. ... It is possible to think of many ways of structuring how those paint colors are offered to the customer. ... While alphabetical order is a satisfactory way to organize a dictionary ... it is a lousy way to organize a paint store.

Customers looking for a movie to rent can easily search movies by actor, director, genre, and more, and if they rate the movies they have watched, they can also get recommendations based on the preferences of other movie lovers with similar tastes, a method called “collaborative filtering.” You use the judgments of other people who share your tastes to filter through the vast number of books or movies available in order to increase the likelihood of picking one you like. (pp. 95–96)

Perhaps students would be more engaged in the process of planning their studies if course catalogs were less like dictionaries and more interactive, although I have not found any studies testing this proposition. One company, MyEdu.com, is attempting to address this void by offering a subscription service to help students plan and track their own progress toward a degree. The online service integrates information about degree requirements at specific schools with details about individual courses from course catalogs, schedules, and even student course evaluations. The service is not available at all schools, and when program requirements are fundamentally confusing, there is only so much technology can do to make them simpler. Nonetheless, it seems plausible that traditional methods of student advisement could be fruitfully augmented (potentially at relatively low per-student cost) with improved technology in at least five areas: career/educational exploration, establishing and tracking student goals, course planning and recommendations, tracking progress toward meeting requirements, and providing early warnings when students fall off track

## 4.2 Learning Communities and Other Integrated Curricula

**Learning communities.** Learning communities (LCs) are “a variety of approaches that link or cluster classes, during a given term, often around an interdisciplinary theme, and enroll a common cohort of students” (Arnett & Van Horn, 2009, p. 31).<sup>6</sup> For example, at Kingsborough Community College in New York City (a CUNY institution), students enrolled in LCs take three courses together, usually a developmental English course, an orientation or student success course, and an academic course (such as health or psychology). Learning communities may address problems described in previous sections in at least two ways: first, they simplify students’ course choices (and schedules) by offering them bundles of two or more courses together; second, they may improve peer networks since students are clustered together in the same set of courses.

The learning community model at Kingsborough was evaluated in a randomized experiment conducted by MDRC (as part of the “Opening Doors” study; see Scrivener et al. 2008). The study found statistically significant positive impacts on a range of outcomes during the treatment period, including credits attempted, credits completed, GPA, and self-reported student experience; however, these impacts tended to fade in post-program semesters. At the end of four semesters, treated students had enrolled for slightly more semesters, had earned slightly more credits, and had slightly higher GPAs (effect sizes around 0.10). One limitation of the MDRC study is that because the LCs involved a cluster of intertwined interventions, it was impossible to disentangle the mechanisms driving these effects. In addition to block schedules, LC students also benefited from smaller classes and other additional supports (textbook voucher, enhanced counseling, tutoring). As Karp (2011) discusses in a companion paper, the typical learning community incorporates several different types of structural, academic, and non-academic support; thus, it is not possible to attribute positive impacts to the more “structured” curriculum versus other aspects of the intervention. Moreover, because the cost of various components is not clear, the overall cost-effectiveness of LCs is also unclear.

---

<sup>6</sup> This is the definition adopted by LaGuardia Community College (CUNY); see <http://www.lagcc.cuny.edu/lc/overview/ppt/keyslidescore.ppt>

One critique of learning communities based on these findings is that they do not appear to have persistent, transformative effects (at least as currently implemented). But it may be unrealistic to expect impacts to continue once the students leave the learning community after the first semester. Expanding such communities beyond the first semester is one potential solution, though block scheduling is more difficult to implement once students begin branching out in their coursework. Overall, the MDRC experiment is consistent with the view that students benefit from a more structured student experience, though it is unclear whether this particular intervention “scales up” in a cost-effective way. Note, however, that the structural feature of the intervention—scheduling a group of students to the same block of courses—may be one of the cheapest components, while smaller classes, faculty collaboration to integrate course material, and additional advising are all potentially costly. It thus would be particularly useful if future research better identified which specific components of learning communities are most central to their success.

**Washington State’s I-BEST program.** Community and technical colleges in Washington State have developed alternative curricula for some students under a program called I-BEST (Integrated Basic Education and Skills Training). The I-BEST model combines instruction in basic skills with college-level career-technical coursework for up to two academic years, in an effort to streamline the curricula and improve student engagement. Note that while I-BEST is more structured than the standard curriculum, it is also more “contextualized”—basic skills are not taught in isolation but are integrated into an applied career-technical context. Thus, to the extent the intervention is successful, it is not possible to isolate structure as the causal mechanism (see Perin’s [2011] discussion of I-BEST in her companion review of the contextualization literature).

Jenkins, Zeidenberg, & Kienzl (2009) undertook a preliminary evaluation of I-BEST, utilizing a propensity score design to match I-BEST students with similar students who did not enroll. The authors find that compared with similar students, students enrolled in I-BEST were significantly more likely to make points gains on the basic skills exam (62% versus 45%), earn college credits (90% versus 67%), and complete an occupational certificate (55% versus 15%). Although these differences are suggestive and consistent with the findings on learning communities, it is also possible that the I-BEST

students differed from their matched counterparts on unobservable characteristics, such as commitment and motivation, which could bias the findings upward. However, preliminary results from a follow-up analysis using a more rigorous design also suggest positive, if somewhat more modest, program effects (Zeidenberg, Cho, & Jenkins, 2010).

### **4.3 Lessons from K-12 Curriculum Design**

**Instructional program coherence.** Research on curriculum design in K-12 provides some relevant insights for thinking about structure in community college programs. For example, Newmann, Smith, Allensworth, and Bryk (2001) define a concept they call “instructional program coherence” as “a set of interrelated programs for students and staff that are guided by a common framework for curriculum, instruction, assessment, and learning climate and that are pursued over a sustained period” (p. 299). This concept is broader than the notion of providing a tightly structured sequence of courses with few electives leading to well-defined education and employment outcomes. Indeed, it seems to come closer to the “package deal” concept of structured and directed programs with integrated supports used by RDP (2006) to describe the approach of private occupational colleges.

Newman et al. (2001) supplement case studies with a quantitative analysis of student test scores using a hierarchical linear modeling (HLM) approach, a non-experimental method which decomposes variation into a portion due to individual characteristics and a portion due to school characteristics. The outcome of interest was the test score growth of Chicago public school students, and teachers’ perceptions of “instructional coherence” was the explanatory variable of interest. They find that schools with higher levels of perceived instructional coherence made higher gains in student achievement. Though consistent with the “structure” hypothesis, this evidence is non-experimental, and the focus on student test scores, rather than persistence and completion, may limit applicability to the community college context.

**Constrained curriculum.** Closer to the notion of academic program coherence as a well-specified course of study is the “constrained curriculum” concept used by Lee and Burkam (2003) in their study of the effect of high school organization and structure on student dropout rates. The authors also use an HLM approach to analyze data from the



High School Effectiveness Study, covering 3,800 students in 190 schools. Again, while the results of such analyses do not necessarily have a causal interpretation, the authors are careful to control for covariates such as student demographics, test scores, and school size. They conclude that schools that offer a more constrained curriculum have fewer dropouts. One concern with this conclusion is the specific variables used to measure “constrained curriculum” here: schools that offered at least one calculus course and fewer below-algebra math courses are considered more constrained. This definition seems to confound the degree of choice/constraint with the degree of substantive rigor in the math curriculum. If students perform better under this type of curriculum, it may be because of higher expectations rather than because of limited choice per se. Finally, there remains the possibility that student aptitude/motivation has not been fully controlled, and that schools offering calculus and fewer sub-algebra courses may have unobservably better students. Despite these concerns, this evidence is at least consistent with the structure hypothesis.

#### **4.4 Radical Organizational Change: Comparing Private Versus Public Two-Year Institutions**

While this paper identifies a number of reasons why the lack of structured choices and procedures may hamper student success in community colleges, it seems unlikely that any single solution can provide a quick fix. Meaningful and lasting change may require more than tweaking around the edges; it may require overhauling the organization so that all aspects of the institution are aligned to promote student success (as discussed by Jenkins [2011] in a companion paper). This is the motivation behind a new community college in the City University of New York (CUNY) system that is being designed from the ground up and is expected to enroll its first students in 2012. Students at the new school will be required to attend full time and will choose from ten to twelve program offerings, and articulation (i.e., course transfer) agreements with CUNY’s four-year institutions will be specified in advance (CUNY, 2008). In describing its decision to limit students’ options upfront, the concept paper for the new college cited research comparing public and private two-year institutions by RDP (2006), who concluded that at least some for-profit schools produce better outcomes by providing students with a more structured experience. This research and related articles are reviewed below.

**Differences in graduation rates.** Stephan, Rosenbaum, and Person (2009) used data from the National Education Longitudinal Study (NELS:88) to examine differences in degree completion (associate degree or higher) between public and private two-year institutions.<sup>7</sup> To help address the issue that these two types of schools may attract different types of students, the authors used a propensity score design in which only students with similar observed characteristics are compared. The authors find little difference in the distributions of grades and test scores among students at the two types of schools, although there is some indication (not quite statistically significant) that private two-years attract students with somewhat higher socioeconomic status (SES). After matching similar students, the authors find that those who attended a private two-year college were 20 to 24 percentage points more likely to complete an associate degree or higher, five to eight years after entry. The difference shrinks substantially (to 7 to 14 percentage points) when those who are still enrolled are included—suggesting that some of the difference between institutions may be in the timing of degree completion.

Limitations of this study include the relatively small sample of students (116) at private two-year colleges, and, as the authors concede, the possibility that the results may be due to unobservable differences in student characteristics. By limiting the range of variation used in the analysis, matching methods, including propensity scores, can exacerbate any omitted variable bias that remains: if individuals were *perfectly* matched, they would not have made different choices. Thus the propensity score method requires the assumption that whatever explains the different choices among apparently similar individuals is purely random, or at least unrelated to the outcome of interest. One issue is that because private colleges tend to offer fewer and more focused programs, they may attract individuals who are similarly focused. Unobserved motivation or ability to pay may be of particular concern given the large average cost difference between the two types of schools (approximately \$11,000 versus \$1,800), although the authors note that financial aid may cut this difference in half (p. 584). Another potential critique is that the degrees conferred at different types of institutions may not be of the same “quality,”

---

<sup>7</sup> Outcomes are measured in the 2000 follow-up survey, when individuals are six years beyond expected high school graduation.

although it is unclear which schools provide the highest labor market return.<sup>8</sup> The authors' preferred hypothesis for explaining the findings is differences in organizational procedures, although it is not tested in this paper.

**Differences in organizational procedures.** The focus of the book *After Admission* by Rosenbaum, Deil-Amen, and Person (2006) is to systematically examine these differences in organizational procedures, which were suggested in previous qualitative work by Bailey, Badway, & Gumpert (2001) that compared one successful for-profit school to three nearby community colleges. RDP conducted in-depth qualitative and survey analyses at seven public and seven private two-year institutions within a single metropolitan area of Illinois.

The authors present evidence that students at community colleges experience greater information barriers than similar students at occupational schools. For example, the private two-year students were significantly more likely than the community college students in the sample to know which courses were needed for degree plans and which classes give college credit, and to have information about prerequisites. Private two-year students were also less likely to take a course they later discovered would not count toward a degree. These differences remained significant even after controlling for student characteristics.

The authors argue that differences in organizational procedures can explain the differences in student experiences; this argument is supported with qualitative descriptions (some of which are referenced in previous sections of this review). They find that the private colleges in their sample had more structured programs, making it easier for students to understand and follow important information, and providing students with fewer opportunities to “mess up” and take a class that they later find out does not count. Advising at the private two-year schools was also more structured and intrusive, requiring mandatory meetings each term. Finally, students at the private schools advanced through programs in cohorts, providing a level of peer support and streamlining the guidance process from initial registration through job placement. Interestingly, for

---

<sup>8</sup> For example, students who would have to take developmental courses at a public institution may not be required to do so at a private school. On the other hand, private institutions tend to offer more career-focused programs that may have a high payoff even for students who would not pass a community college's English and math requirements.

students in health programs, the effect of school type on student information problems reverses—perhaps because the type of health programs offered at private colleges tend to be newer and less regulated than those offered at community colleges (RDP, 2006, p. 108). On the basis of these findings, RDP’s key recommendations include that community colleges simplify their curricula, improve counseling and more proactively monitor student progress, and improve information systems.

Overall, the qualitative analysis provided by RDP is thorough and compelling. There are a few important reasons why this work does not definitively prove the causal importance of structure, however (all of which are acknowledged by the authors). First, as mentioned above with respect to the Stephan et al. (2009) study, students who choose to attend a private institution rather than a community college may simply be different. Perhaps most important, given the higher cost of private institutions as well as their more limited range of offerings, they may tend to attract students who are more focused and motivated toward a specific goal than students entering a community college. Second, even if high-quality private institutions truly do produce better outcomes for similar students, it is difficult to disentangle precisely which aspect of the “treatment” is most important: it could be the more structured curriculum, but it could also just be the lower student–advisor ratios and enhanced student services that are made possible by charging higher tuition. Indeed, RDP argue that the relative advantage of occupational colleges over community colleges stems from the “package deal” (2006, pp. 225–227) afforded to students by the occupational colleges through a complementary combination of well-structured programs and mandatory, well-integrated support services. Finally, it is important to note that RDP compare “top” (i.e., accredited) private institutions with “typical” community colleges (p. 36). Thus much of the story may be about the gap between the best institutions and average institutions rather than about private versus public institutions per se. Nevertheless, the qualitative analyses provided by RDP (2006) as well as the related quantitative analyses by Stephan et al. (2009) are both highly consistent with the structure hypothesis.

## 5. Conclusions and Future Directions

The observational evidence is very strong that community college students are often confused and sometimes overwhelmed by the complexity of navigating their community college experience. And the evidence from other fields (such as consumer choice and financial planning) is very strong that individuals' ability to make good decisions—or to make any decision at all—is adversely affected by several of the factors that are present in the community college context. The evidence relating to specific solutions in the community college context is limited, but growing. Enhanced advising, assistance in navigating bureaucracy (e.g., financial aid forms), and the provision of linked cohorts/curricula through learning communities are among the interventions that have been evaluated and found to have positive (if not transformational) impacts.

In terms of future directions for policy and research, it is worth emphasizing that the structure hypothesis raises several different types of problems, each of which might require different types of solutions. For example, “hassle factors” such as long lines at registration, burdensome and/or redundant paperwork, or negative interactions with financial aid staff may require behind-the-scenes streamlining of bureaucratic processes, additional support staff, and/or new staff training. While the cost and effort required for such reforms may not be trivial, the argument for reducing hassle factors is uncontroversial.

Similarly, there is little substantive argument against providing students with better information (and better ways to search and navigate this information) to help them manage the sheer complexity of gathering and correctly utilizing all of the relevant information on the costs, benefits, and requirements of alternative educational paths (and then updating this information every semester). One potential light-touch intervention to test in this area would be a sophisticated online college advising tool, which would integrate career exploration and goal setting, prerequisite navigation, course planning and recommendations, tracking of student progress in meeting requirements, and early warnings when students fall off track. Such a tool would not replace trained counselors, but would assist currently overburdened counselors by automating the nuts-and-bolts aspects of college guidance, thus freeing up staff to focus on more complicated individual issues.

A related, but distinct challenge is the number of non-alignable program options students must choose from, which psychological evidence suggests can cause decision paralysis, arbitrary decision outcomes, and dissatisfaction. Simply providing students with more information may not solve this problem, but reducing options is certainly more controversial. CUNY's new community college, which explicitly limits students' choices upfront, is a radical potential solution, and it deserves a well-conceived evaluation. Given that the new school seems likely to be oversubscribed, there is strong potential for a quasi-experimental or even randomized evaluation of access to this new institution. Of course, an evaluation of a single school can hardly provide definitive evidence on the consequences of limiting student choice—especially if the school is brand new and still working out the inevitable kinks—nonetheless, such a study would be an important contribution.

Helping students navigate an abundance of options need not imply restricting student choice, however, as the new CUNY school would do. A middle option would be for schools to provide the equivalent of a “prix-fixe” menu, offering a limited selection of pre-packaged college pathways that students could choose from instead of planning their schedules a la carte. Similarly, colleges might experiment with setting “smart defaults,” as companies have begun to do with their employees' retirement plan choices. These defaults do not limit students' ability to customize their own path through college, but provide them with a starting point. For example, incoming students could be “pre-registered” for a set of common foundational courses, which they would then be free to change; returning students could be pre-registered for a set of logical follow-up courses based on their major and previous coursework.

Overall, the evidence that a problem exists is very strong, but the evidence on what policies best address it—particularly in terms of cost-effectiveness and scalability, as well as in terms of figuring out which types of interventions work best for whom and under which circumstances—is much more limited. But the fact that there is no silver bullet need not be cause for discouragement. Instead, the issue of structure in higher education decision-making may be viewed as ripe for future innovation and research.

## References

- Agarwal, Sumit, Driscoll, J. C., Gabaix, X., & Laibson, D. (2008). *The age of reason: Financial decisions over the lifecycle* (NBER Working Paper No. 13191). Cambridge, MA: National Bureau of Economic Research.
- Arnett, A., & Van Horn, D. (2009). *Connecting mathematics and science: A learning community that helps math-phobic students*. *Journal of College Science Teaching*, 38(6), 30–34.
- Avery, C., & Hoxby, C. (2004). Do and should financial aid packages affect students' college choices? In C. M. Hoxby (Ed.), *College choices: The economics of where to go, when to go, and how to pay for it* (pp. 239–302). Chicago, IL: University of Chicago Press.
- Bailey, T. (2009). Challenge and opportunity: Rethinking the role and function of developmental education in community college. *New Directions for Community Colleges*, 145, 11–30.
- Bailey, T., Badway, N., & Gumport, P. J. (2001). *For-profit higher education and community colleges* (NCPI Technical Report). Stanford, CA: Stanford University School of Education, National Center for Postsecondary Improvement.
- Bailey, T., Jenkins, D.W. & Leinbach, T. (2005). *What we know about community college low-income and minority student outcomes: Descriptive statistics from national surveys*. New York, NY: Columbia University, Teachers College, Community College Research Center.
- 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(2), 255–270.
- Beggs, J. M., Bantham, J. H., & Taylor, S. T. (2006). Distinguishing the factors influencing college students' choice of major. *College Student Journal*, 42, 381–394.
- Bertrand, M., Karlan, D., Mullainathan, S., Shafir, E., & Zinman, J. (2005). *What's psychology worth? A field experiment in the consumer credit market* (NBER Working Paper No. 11892). Cambridge, MA: National Bureau of Economic Research.
- Bertrand, M., Mullainathan, S., & Shafir, E. (2004). A behavioral-economics view of poverty. *American Economic Review*, 94(2), 419–423.

- Bertrand, M., Mullainathan, S., & Shafir, E. (2006). Behavioral economics and marketing in aid of decision making among the poor. *Journal of Public Policy & Marketing*, 25(1), 8–23.
- Beshears, J., Choi, J. J., Laibson, D., & Madrian, B. (2008). How are preferences revealed? *Journal of Public Economics*, 92(8–9), 1787–1794.
- Bettinger, E. P., Long, B. T., Oreopoulos, P., & Sanbonmatsu, L. (2009). *The role of simplification and information in college decisions: Results and implications from the H&R Block FAFSA experiment* (NCPD Working Paper). New York, NY: National Center for Postsecondary Research.
- Botti, S., & Iyengar, S. S. (2006). The dark side of choice: When choice impairs social welfare. *Journal of Public Policy & Marketing*, 25(1), 24–38.
- City University of New York [CUNY]. (2008, August). *A new community college concept paper*. New York, NY: CUNY Office of Academic Affairs. Retrieved from [http://www.cuny.edu/academics/initiatives/ncc/about/NCC\\_Concept\\_paper.pdf](http://www.cuny.edu/academics/initiatives/ncc/about/NCC_Concept_paper.pdf)
- Cohen, A. M., & Brawer, F. (2008). *The American community college* (5th ed.). San Francisco, CA: Jossey-Bass.
- Center for Community College Student Engagement (2009). *Benchmarking & benchmarks: Effective practice with entering students*. Austin, TX: The University of Texas at Austin, Community College Leadership Program.
- Deil-Amen, R., & Rosenbaum, J. E. (2003). The social prerequisites of success: Can college structure reduce the need for social know-how? *Annals of the American Academy of Political and Social Science*, 586(1), 120–143.
- Dhar, R., & Nowlis, S. M. (1999). The effect of time pressure on consumer choice deferral. *Journal of Consumer Research*, 25(4), 369–384.
- Dynarski, S. M., & Scott-Clayton, J. (2006). The cost of complexity in federal student aid: Lessons from optimal tax theory and behavioral economics. *National Tax Journal*, 59(2), 319–356.
- Fonte, R. (1997). Structured versus laissez-faire open access: Implementation of a proactive strategy. *New Directions for Community Colleges*, 100, 43–52.
- Gardenhire-Crooks, A., Collado, H., & Ray, B. (2006). *A whole 'nother world: Students navigating community college*. New York, NY: MDRC.
- Goldin, C., & Katz, L. F. (2008). *The race between education and technology*. Cambridge, MA: The Belknap Press of Harvard University Press.



- Gourville, J. T., & Soman, D. (2005). Overchoice and assortment type: When and why variety backfires. *Marketing Science*, 24(3), 382–395.
- Greenleaf, E. A., & Lehmann, D. R. (1995). Reasons for substantial delay in consumer decision making. *Journal of Consumer Research*, 22(2), 186–199.
- Grubb, W. N. (2006). “Like, what do I do now?”: The dilemmas of guidance counseling. In T. Bailey and V. Morest (Eds.), *Defending the community college equity agenda* (pp. 195–222). Baltimore, MD: Johns Hopkins University Press.
- Heitmann, M., Lehmann, D. R., & Herrmann, A. (2007). Choice goal attainment and decision and consumption satisfaction. *Journal of Marketing Research*, 44(2), 234–250.
- Jackson, C. K. (2010). *A stitch in time: The effects of a novel incentive-based high school intervention on college outcomes* (NBER Working Paper 15722). Cambridge, MA: National Bureau of Economic Research.
- Jenkins, D. (2011). *Redesigning community colleges for completion: Lessons from research on high performance organizations* (CCRC Working Paper No. 24, Assessment of Evidence Series). New York, NY: Columbia University, Teachers College, Community College Research Center.
- Jenkins, D., Zeidenberg, M., & Kienzl, G. S. (2009). *Educational outcomes of I-BEST, Washington State Community and Technical College System’s Integrated Basic Education and Skills Training program: Findings from a multivariate analysis* (CCRC Working Paper No. 16). New York, NY: Columbia University, Teachers College, Community College Research Center.
- Karp, M. M. (2011, forthcoming). *Toward a new understanding of non-academic student support: Four mechanisms encouraging positive student outcomes in the community college* (CCRC Working Paper, Assessment of Evidence Series). New York, NY: Columbia University, Teachers College, Community College Research Center.
- Laibson, D. (1997). Golden eggs and hyperbolic discounting. *Quarterly Journal of Economics*, 112(2), 443–477.
- Lareau, A. (2003). *Unequal childhoods: Class, race, and family life* (1st ed.). Berkeley and Los Angeles, CA: University of California Press.
- Lee, V. E., & Burkam, D. T. (2003). Dropping out of high school: The role of school organization and structure. *American Educational Research Journal*, 40(2), 353–393.

- Lusardi, A., & Mitchell, O. S. (2007). Financial literacy and retirement preparedness: Evidence and implications for financial education. *Business Economics*, 42(1), 35–44.
- Lusardi, A., Mitchell, O. S., & Curto, V. (2010). *Financial literacy among the young: Evidence and implications for consumer policy* (NBER Working Paper No. 15352). Cambridge, MA: National Bureau of Economic Research.
- Madrian, B. C., & Shea, D. F. (2001). The power of suggestion: Inertia in 401(k) participation and savings behavior. *Quarterly Journal of Economics*, 116(4), 1149–1187.
- National Center for Education Statistics. (2008). *Special analysis, 2008: Community colleges*. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. Retrieved from [http://nces.ed.gov/programs/coe/2008/analysis/sa\\_table.asp?tableID=1024](http://nces.ed.gov/programs/coe/2008/analysis/sa_table.asp?tableID=1024)
- Newmann, F. M., Smith, B., Allensworth, E., & Bryk, A. S. (2001). Instructional program coherence: What it is and why it should guide school improvement policy. *Educational Evaluation and Policy Analysis*, 23(4), 297–321.
- O'Banion, T. (1994). An academic advising model. *NACADA Journal*, 14(2), 10–16.
- O'Donoghue, T., & Rabin, M. (2001). Choice and procrastination. *Quarterly Journal of Economics*, 116(1), 121–160.
- Perin, D. (2011, forthcoming) *Facilitating student achievement through contextualization* (CCRC Working Paper, Assessment of Evidence Series). New York, NY: Columbia University, Teachers College, Community College Research Center.
- Rosenbaum, J. E., Deil-Amen, R., & Person, A. E. (2006). *After admission: From college access to college success*. New York, NY: Russell Sage Foundation.
- Scrivener, S., Bloom, D., LeBlanc, A., Paxson, C., Rouse, C. E., & Sommo, C. (with Au, J., Teres, J. J., & Yeh, S.) (2008). *A good start: Two-year effects of a freshman learning community program at Kingsborough Community College*. New York, NY: MDRC.
- Simon, H. (1976). *Administrative behavior*. New York, NY: The Free Press.
- Stephan, J. L., Rosenbaum, J. E., & Person, A. E. (2009). Stratification in college entry and completion. *Social Science Research*, 38(3), 572–593.
- Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. New Haven, CT: Yale University Press.

- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago, IL: University of Chicago Press.
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, *185*, 1124–1131.
- Tversky, A. & Shafir, E. (1992). Choice under conflict: The dynamics of deferred decision. *Psychological Science*, *3*(6), 358–361.
- Tversky, A., & Simonson, I. (1993). Context-dependent preferences. *Management Science*, *39*(10), 1179–1189.
- Zeidenberg, M., Cho, S.-W., & Jenkins, D. (2010). *Washington State's Integrated Basic Education and Skills Training program (I-BEST): New evidence of effectiveness* (CCRC Working Paper No. 20). New York, NY: Columbia University, Teachers College, Community College Research Center.