

# Financial Constraints & Collegiate Student Learning: A Behavioral Economics Perspective

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*Gaps in college completion persist between low- and high-income students. These disparities can be attributed in large part to a lack of college affordability and information asymmetries about the process of accessing financial assistance as well as other campus-based resources and supports. While substantial policy investments have been made to address these inequalities, such as expanded financial aid programs and increased investments in college advising, these programs are not always fully utilized by students who might benefit from them. In this essay, we apply a behavioral economics perspective to examine how financial constraints affect students' navigation of the complex processes – financial, academic, and otherwise – required to succeed in American higher education. We conclude with a discussion of evidence-based behavioral strategies that policy-makers and educators can draw on to proactively mitigate these behavioral obstacles and improve student success.*

For nearly half a century, higher education policy at the federal and state levels has focused on increasing college access for low-income youth. Policies have included need-based grants and loans to defray the cost of pursuing postsecondary education, such as the federal Pell Grant and numerous state-funded means-tested grant programs. The federal and state governments have also invested in advising and tutoring programs, such as GEAR UP and Upward Bound at the federal level and Advise TN in Tennessee, as a way to support low-income students' college readiness and preparation. Over this time, college enrollment has increased steadily, with notable gains among low-income populations.<sup>1</sup> However, despite increases in college enrollment, college completion rates have stagnated. Just under half of all degree-seeking college students in 1996 completed an associate's or bachelor's degree within six years of entry; in the five most recent cohorts of incoming college students, roughly the same proportion of students – 55 percent – completed a

degree.<sup>2</sup> Socioeconomic disparities in college completion are pronounced and growing. Over half of the youth born into the top income quintile earn a bachelor's degree by age twenty-five compared with fewer than 10 percent of youth born into the bottom income quintile.<sup>3</sup>

Historically, much of the focus on improving student success once enrolled in college has been on students' academic experience, including several essays in this volume that address the classroom experience. In other work, both policy-makers and researchers have pointed to developmental education as an impediment to student persistence and completion. Two-thirds of community college students enrolling in 2003 – 2004 took at least one remedial course, as did about 40 percent of students enrolling at public four-year institutions.<sup>4</sup> Yet the evidence on the effectiveness of remedial courses is mixed. Some studies find that students who take remediation are more likely to persist in college,<sup>5</sup> while others find null or even negative effects of remedial courses.<sup>6</sup> Furthermore, disparities in college completion remain even upon controlling for academic achievement.<sup>7</sup>

In parallel, there have been numerous initiatives aimed at improving academic advising to increase completion rates. Coaching and mentoring programs yielded more consistent results than remediation at improving student performance and persistence, though advisors often address myriad student needs, not just promoting academic engagement.<sup>8</sup> Many community colleges have also invested in developing “structured” or “guided” pathways for students that include specialized course plans that help clarify for students what courses will count toward their intended degree or transfer path, as well as increased advising and monitoring of student performance to trigger early interventions.<sup>9</sup> While there exists a correlation between structured pathway participation and student persistence, few research studies have captured the effects of these innovations.

More recently, there has been growing recognition that making college affordable to *attend* does not on its own ensure that students will have the financial resources to complete postsecondary education. While the Pell Grant and numerous state grants are renewable, students may lose aid because they do not maintain sufficient academic performance, because they fail to reapply for aid each year, or because they take too many courses that do not count toward their degree and use up their aid eligibility before they graduate. Even for students who maintain their aid and use it efficiently, rising college costs mean that many students face gaps between their grant aid and the cost of attendance, which students may have to fill through a combination of loans, work, and family resources. Furthermore, many students face a host of costs not directly related to pursuing their degree – transportation, child care,

food – that they may not be able to cover through financial aid and income they earn while in school. Low-income students also arrive on campus with fewer insights into the academic resources available to them and often struggle to feel a sense of belonging among their more advantaged peers, which hampers their ability to engage with their studies.

While large, structural policy changes are necessary to combat many of the challenges students encounter in their pursuit of a postsecondary credential, insights from the behavioral sciences also provide a lens through which researchers, practitioners, and policy-makers can understand how students move through the postsecondary system. Over the past fifty years, numerous studies in behavioral economics, neuroscience, and social and cognitive psychology have explored how individuals make decisions, particularly under uncertainty. Recently, higher education scholars have applied lessons from these disciplines to better understand how students and their families make decisions about the investment in a college education. In this essay, we explore how behavioral science insights can help policy-makers and higher education professionals understand the challenges students face in college persistence and we consider the potential of behaviorally informed interventions to improve college completion rates.

Each day, we face hundreds of choices about how to allocate our scarce resources, particularly our time and money. Should I buy a salad or a burger for lunch? Should I walk to the store or drive? Should I study for the test in two weeks or watch *American Ninja Warrior*? At the same time, we are making choices about how we would like to allocate our resources in the mid-range to distant future. Should I go to college or work for a few years? Should I try to save up and buy a house or am I likely to move from this city soon? Traditional economic theory posits that individuals think about the costs and benefits of each of these decisions and choose the option that maximizes their utility and has the greatest benefits for the lowest cost. When it comes to investing in additional years of education, this cost-benefit framework evaluates potential costs (such as tuition and foregone wages) relative to benefits (such as higher earnings after graduation and forging relationships with classmates).<sup>10</sup>

Behavioral science research, however, has documented that individuals make different choices based on a number of external factors that traditional models would not expect to affect decision-making: for example, making a different choice in the morning than in the evening about what they would like to have for dinner that night. This framework for understanding human behavior recognizes that our ideal behavior is often different from our actual

behavior depending on whether we are engaging in slow, forward-thinking processes, or under stress and cognitive demands that shift us to faster, present-oriented thinking.<sup>11</sup> The hypothesis is not that people make irrational decisions, necessarily, but that they often make decisions using “bounded rationality”: that is, rational given a set of practical constraints.<sup>12</sup> Starting with cognitive psychologists Daniel Kahneman and Amos Tversky’s influential work in the 1970s, behavioral science research has long explored how the framing and context of choices affect individuals’ decisions within bounded rationality, when they may not have the information, time, or cognitive bandwidth to engage in a thorough cost-benefit analysis.<sup>13</sup>

One easily relatable response to a complex decision is to put off the choice until later, under the hope that it will be easier to handle complexity tomorrow.<sup>14</sup> However, individuals are less likely to make optimal choices when the decision and rewards or costs are immediate, a phenomenon known as *time-inconsistent preferences*. For example, people have different stated preferences about how they will spend their time or financial resources in the future based on whether they are asked their preferences well in advance or immediately ahead of time.<sup>15</sup> Planning ahead of time, people often prefer options that have greater benefits in the long run, even if there are short-term costs.<sup>16</sup> Related, individuals are more likely to show a *present bias* and prefer a smaller reward now than to wait for a larger reward in the future; though, individuals are more likely to prefer the long-term reward when the short-run reward is moved just a little into the future (for instance, if an immediate reward is delayed fifteen minutes).<sup>17</sup> Time-inconsistent preferences are often influenced by *loss aversion*: a strong reaction to the idea of losing out on something, such as money or time, that we have already mentally designated for another purpose.<sup>18</sup>

In the face of some of these challenges, individuals may rely on heuristics or “rules of thumb” to make decisions rather than a careful evaluation of costs and benefits. Heuristics are shortcuts that the brain can use to simplify decision-making. One example is *availability bias*: the tendency to use easily accessible information to make decisions.<sup>19</sup> When it comes to important decisions about financial aid refiling once enrolled in college, for example, college students may rely on the experiences of their friends, who may not have gotten any additional scholarships for their sophomore year, instead of applying themselves and seeing what happens. Another common heuristic employed in decision-making is the use of *anchors* or *reference points*.<sup>20</sup> Often this comes in the shape of relying on peer behavior or achievements to benchmark effort and performance. For example, a growing literature finds that one’s position relative to one’s peers can strongly affect student outcomes. One study

examined the longer-run outcomes of students from different classrooms with similar academic achievement at the elementary level. The researchers found that the students at the top of their class have higher test scores, have more confidence, and are more likely to pursue science and technology careers compared with students with similar academic performance but that had joined higher-achieving classes in which they were at the bottom of their immediate peer group.<sup>21</sup> In higher education, particularly for courses with heterogeneity in average performance across course sections or discussions, similar peer effects may manifest as similarly performing students encounter different average peer environments.

One particularly powerful heuristic that policy-makers and businesses frequently leverage is individuals' tendency to go with the *default* option.<sup>22</sup> When people have to make a decision, there is frequently a stated default. For example, when you sign up for a new account with an online store, the stated default is to sign up also for their email list. You have the option to uncheck that box agreeing to subscribe, but few people do. Closely related to default options is a *status quo bias*: the tendency not to change systems already in place.<sup>23</sup> To continue the email-marketing example, once individuals have subscribed to an email, the typical unsubscribe rate per messaging campaign is less than 1 percent.<sup>24</sup> Both default and status quo bias are a product of individuals' tendency to avoid *hassle factors*: the small but time-consuming processes needed to accomplish a goal, even if an onerous investment of time tackling the hassles in the present would result in substantially better outcomes in the longer-term.<sup>25</sup> It feels easier just to delete Amazon's daily promotional emails than to log into your account and manage your email subscription preferences.

In the K–12 setting, defaults and status quo bias have proven powerful tools to get parents to sign up to receive important updates about their children's performance and attendance rates. When parents had to reply and opt-in to receiving that information, only 8 percent of parents signed up; when the school set the default as parents receiving information, with the option of opting-out, 96 percent remained enrolled in the program.<sup>26</sup> In addition to lessons about how defaults and status quo bias could affect college student engagement with important sources of information about college and financial aid deadlines, in the postsecondary context, researchers have advocated for changing structural defaults such as modifying the default loan repayment plan.<sup>27</sup> Currently, the default "standard" repayment plan assumes a fixed monthly repayment amount that is consistent throughout the period of repayment. Recognizing that individuals' incomes tend to grow over time, there is also an income-based repayment plan that asks individuals to pay a percent of their income and adjusts the monthly repayment amount lower or

higher depending on how much individuals are earning. While anyone can opt-in to the income-based repayment plan, due to individuals' strong preference for the default option, many students who would benefit from the flexible and often lower payments under income-based repayment end up starting with the standard, fixed monthly repayment plan, and given the status quo bias, few students switch. Federal interventions have proven that targeted outreach sharing information about income-based repayment plans and particularly messaging that highlights loss aversion can increase take-up of the income-based plans, though advocates argue that setting it as the default repayment option would be more effective.<sup>28</sup>

Research on the psychological effects of scarcity inform why low-income students and their families may have an even harder time engaging with the necessary steps to maintain financial aid, remain enrolled, and succeed in college. When Congress established the Pell Grant in 1972 to ensure that financial barriers would not prevent academically prepared students from enrolling in college, the average award covered nearly all of students' tuition and fees at public colleges and universities. In the decades since, the purchasing power of the Pell Grant has declined substantially, while tuition, fees, and the cost of attendance have increased.<sup>29</sup> Students have three primary options for covering gaps between the grant aid they receive and the full cost of attendance: borrowing money, either through federal or state student loan programs or from private sources; working to generate income while in college; or drawing on family resources. The combination of borrowing, working, and drawing on family resources may impose substantial stress on students and contribute to their heightened levels of financial anxiety about how they will pay for college from one semester to the next.

Behavioral economics and psychology research demonstrate a strong link between the financial stress and anxiety individuals experience and the cognitive bandwidth that they can apply toward challenging and complex tasks. Many factors affect the cognitive bandwidth people are able to dedicate to decision-making: for instance, time limits, hunger, or stress from poverty.<sup>30</sup> Students whose time is divided between courses, work, and family commitments may be more likely to lose sight of deadlines or have insufficient cognitive attention to devote to their coursework or other important procedural tasks, like reapplying for financial aid. This challenge is likely even greater for low-income students who are also racial or ethnic minorities on their campus and face the cognitive demands of navigating racial bias.<sup>31</sup> In one experiment, researchers found that sugarcane farmers from India scored higher on cognitive tests after the harvest – when they were at their wealthiest – than

prior to the harvest, suggesting that financial stress impedes individuals' ability to access their various cognitive resources and knowledge.<sup>32</sup> In the college context, one experiment found that when college students were prompted to think about the financial burden of college, they performed worse on cognitive tasks.<sup>33</sup> Interestingly, when students were reminded of the financial burden of college – the costs – but concurrently prompted to think about their future occupation – the benefits – this cognitive impairment was lifted, suggesting implications for designing outreach and messaging campaigns to students to alleviate the cognitive stress of student borrowing.<sup>34</sup> Attention to pressing financial issues – for example, paying for car repairs or childcare – may “crowd out” individuals' focus on medium- to long-term financial issues such as refiling the FAFSA (Free Application for Federal Student Assistance) or constructing the optimal loan package.<sup>35</sup>

**I**n addition to increases in traditional college costs such as tuition and fees and the academic consequences of students working and borrowing to address the gaps between grant aid and cost, the demographics of who goes to college have also shifted. Today, more low-income students are enrolling in college than ever before.<sup>36</sup> About 40 percent of students enrolled in a degree-granting postsecondary institution are over the age of twenty-five, with the majority of Pell Grant recipients over the age of twenty-one.<sup>37</sup> Community colleges enroll approximately 40 percent of all first-time college students in the United States.<sup>38</sup> College students today also have many responsibilities other than school; nearly one-third of all female undergraduate students have a child, as do 18 percent of male undergraduates.<sup>39</sup> With this compositional shift has come the introduction of and increase in additional cost categories (like childcare costs) that tax the mental bandwidth available to students to dedicate to college learning.

The share of students enrolled in a community college is an especially relevant shift to the discussion of financial stress and student persistence rates. Over the past few decades, about one-quarter of full-time undergraduate students and 42 – 44 percent of all undergraduates are enrolled in a public, two-year institution, making up a large share of the undergraduate population.<sup>40</sup> Several features of the community college landscape in particular likely exacerbate the behavioral biases that students exhibit when interacting with the complex financial aid and course registration systems. Community colleges primarily comprise students who commute to and from campus and who balance extensive work and family commitments outside of school.<sup>41</sup> Community colleges also tend to rely on communications channels – principally email, although increasingly technology-assisted advising tools as well – that have

low visibility and may not effectively reach students.<sup>42</sup> This combination of limited time on campus, limited attention because of other demands in their lives, limited access to advising, and ineffective institutional communication channels may mean that students are simply unaware of opportunities to earn guaranteed admissions to four-year universities in their state.

In addition to these large factors affecting student engagement and access to advising, low-income, adult, and student parents also face challenges in individual course engagement. When it comes to course success, the broad strokes formula is straightforward: show up to class, pay attention, and study.<sup>43</sup> Insights from behavioral sciences help explain why students in general might not complete these steps. For example, time-inconsistent preferences might sway a student to sleep a few additional hours after an overnight shift rather than go to class.<sup>44</sup> But additional responsibilities (such as a full-time job) and costs (such as children) outside of the college context introduce other obstacles to success and exacerbate behavioral responses to these challenges. For instance, student parents need to secure another adult to watch their children during class; 60 percent of student mothers and 38 percent of student fathers are single parents, requiring them to find other family members or professional care to watch their children.<sup>45</sup> When a caregiver is sick and unable to take care of the children, the student parent has few options to make it to class. To take another example, as noted above, students living off campus must find and often pay for parking at school. Unanticipated mechanical or logistical issues may prevent them from being able to attend class. At any of these barriers, it is easy to imagine how some of the behavioral and psychological responses we highlighted earlier can come into play: the stress and reduced cognitive bandwidth from a sudden loss of childcare might reduce students' ability to engage fully with difficult homework tasks, and time-inconsistent preferences might make a student less likely to incur the short-term cost of a cab to get to class, even if the long-term benefits of attending class outweigh the upfront financial outlay.

Succeeding in a course often requires substantial student-faculty interaction, such as students going to office hours for clarity on a point made in class or to tell a professor when they have a major life event or financial obstacle that might affect their course performance. Having meaningful interactions with faculty members is an important predictor of college persistence and completion.<sup>46</sup> But low-income students are less likely to engage with faculty members, and socioeconomic gaps in developing those student-faculty relationships may help explain some of the socioeconomic gaps in college graduation rates.<sup>47</sup> While more affluent students often have parents or other adult mentors in their life who let them know about the importance of faculty engagement (and



can also personally answer a host of questions their child might have about academic success strategies), parents of low-income college students often lack the information necessary to advise their children. In addition, students in a community college setting may not have peers with high levels of faculty interactions and course engagement to anchor their behavior to.<sup>48</sup>

Since the early 2000s, there has been broad recognition among educators, researchers, and policy-makers that informational and behavioral barriers associated with completing the FAFSA can impede college-ready, financially eligible students from receiving need-based federal or state financial assistance for postsecondary education.<sup>49</sup> Ten percent of college freshmen who would be eligible for means-tested financial aid do not fill out the FAFSA, and other academically prepared high school students may not make it to college because they do not complete the FAFSA and thus do not receive aid that would make college more affordable for them and their families.<sup>50</sup>

Awareness of the barriers created by the FAFSA has led to numerous initiatives to simplify the application, to make the process of applying for aid more visible and understandable, and to increase students' access to professional assistance when completing the FAFSA. Most of these efforts, however, have focused on initial FAFSA completion, especially among high school seniors in traditional public school settings. Comparatively less attention has been paid to the challenges students may face maintaining aid they initially receive, despite the fact that students have to renew their FAFSA every year to maintain access to federal – and in many cases state and institutional – financial aid. Descriptive research suggests that a sizeable share of college students fail to refile their FAFSA each year, even those who receive federal Pell Grants and who are in good academic standing. Drawing on data from the National Center for Education Statistics' Beginning Postsecondary Study, researchers found that one in six college freshmen who received a Pell Grant and who had a GPA of 3.0 or higher did not successfully complete the FAFSA for their second year in college.<sup>51</sup> Among those academically successful students who return for sophomore year, one in ten do not complete the FAFSA and therefore do not receive financial assistance for their second year. The study authors estimate that these nonfilers forgo approximately \$2,000 in federal grant assistance, on average, by not refile; and not surprisingly, failure to refile the FAFSA is strongly and negatively associated with staying in college or earning a degree.

Behavioral economics insights help explain why students who already completed the FAFSA at least once, received grant aid, and were doing well academically might nevertheless fail to renew their FAFSA. To begin, first-year

students at residential colleges and universities are often living away from home for the first time and are no longer as closely connected to school counselors or other mentors on whom they may have relied for assistance applying for financial aid. The lack of regular connection with family, professional support, or mentors may mean that reapplying for financial aid is less at the top of students' minds. Even for students who remember that they need to refile the FAFSA, the lack of access to trusted sources of assistance may mean that students indefinitely put off FAFSA refiling in favor of more demanding or immediate tasks. This is particularly the case among students new to college, who may have limited attention to devote to FAFSA refiling amidst an array of new academic and social commitments. The behavioral challenge of refiling their FAFSA is likely to be particularly daunting for students at community colleges. Advising resources at community colleges are often severely limited and students typically have to work through confusing bureaucracies to get one-on-one academic or financial counseling.<sup>52</sup> The nonresidential aspect of community college also translates into students spending less time on campus than do their peers at residential four-year institutions, making it more difficult to find time to meet with financial aid support staff. These obstacles contribute to Pell Grant recipients at community colleges being almost ten percentage points less likely to refile their FAFSA than their peers at four-year institutions, holding constant other student and institutional characteristics.<sup>53</sup> In addition to the direct complexities and behavioral barriers associated with refiling the FAFSA, students may not maintain financial aid because they do not believe they are still eligible for financial support. More than half of all Pell Grant recipients report not reapplying for financial aid because they thought they were no longer eligible.<sup>54</sup> This may be due in part to institutions informing students that they are not maintaining satisfactory academic progress (SAP). In order to maintain eligibility for federal financial aid, students typically have to maintain a 2.0 GPA or higher and complete at least two-thirds of the credits for which they enroll. Yet SAP requirements may not be communicated clearly or proactively to students when they first matriculate to college, and, while enrolled, they may not receive timely updates that could serve as early indicators that they need to access additional academic support like tutoring. As a result, students may not understand the link between their academic performance and their ongoing access to financial aid.

Drawing on both national and state administrative data, researchers have found that over 20 percent of first-year Pell Grant recipients are at risk of failing to meet SAP requirements because they do not maintain a sufficient GPA.<sup>55</sup> Among community college first-year Pell Grant recipients, one in four

is at risk of not meeting SAP requirements because their GPA is too low. The authors find mixed evidence on how failing to meet SAP requirements affects students' persistence in or completion of college, but the interplay of academic performance and maintenance of financial aid eligibility may further exacerbate the broader set of financial challenges that can impede student success in college.

While many institutions, and particularly two-year colleges, serve a high proportion of low-income and adult learners, many low-income students struggle to find other students at their school from a similar background and facing similar economic challenges. This is especially the case at more selective institutions: students from the bottom income quintile represent about 4 percent of enrollees at highly selective "Ivy Plus" colleges and about 7 percent of students at selective private colleges.<sup>56</sup> Despite these institutions having more resources and higher graduation rates, some students feel isolated, struggle to connect with their peers, and experience low levels of social belonging with their campus.<sup>57</sup> These low levels of integration (or belonging) with the academic and social culture of their campus are associated with lower likelihoods of remaining enrolled and graduating.<sup>58</sup> Students may also experience stereotype threat, broadly defined as stress that their struggles might confirm another person's stereotype about a group to which the student belongs, such as being a low-income or older student.<sup>59</sup> Students experiencing these psychological stresses tend to perform worse on verbal and math assessments and broadly have lower levels of persistence in college.

Financial constraints may also serve as a more directly limiting factor in how college students form relationships; in surveys, more than half of all low-income college students reported they were unable to participate in social activities because they could not afford them and felt pressure to spend money they did not have to keep up with social engagements.<sup>60</sup> Particularly to the extent that college serves as a place where students make connections for their professional careers, the pricing out of social engagement may prevent lower income students from receiving the social mobility benefits of college.<sup>61</sup>

When low-income students experience financial stresses and psychological barriers to connecting with their institution, they are less likely to seek out help.<sup>62</sup> Qualitative surveys of undergraduate students suggest that first-generation college students are less likely to discuss social/emotional issues with their family and exhibit more symptoms of depression and lower life satisfaction than their continuing-generation peers.<sup>63</sup> Often students are unaware of available resources to address their problems, or may view seeking help

as a sign of weakness and confirmation of their self-doubts about belonging in college.<sup>64</sup> This creates a vicious cycle in which small challenges snowball, with advisors and faculty unaware of issues and the need for intervention.

**A**s outlined in this essay, there are several financial challenges that make it difficult for low-income students to engage fully in the collegiate learning process. Not only have tuition and fees increased, with students working and borrowing more to fund their education, but the types of students enrolling in college have additional financial constraints, such as childcare and transportation, that make academic engagement difficult. At several institutions, students encounter dramatic financial inequities that result in stress and lower senses of social belonging, both of which negatively affect their likelihood of engaging with classroom materials and successfully persisting through degree completion. Here we propose evidence-based strategies that policy-makers and educators can draw on proactively to mitigate these behavioral responses and improve rates of student success. We identify the most promising changes that different levels of the higher education system could implement at the federal/state level, the state/institution level, and the institution/faculty level. We strongly recommend targeted financial investments at the federal/state level and note that while the interventions and programs we propose at the state/institution and institution/faculty levels will also help students, they are not a replacement for increased appropriations to support the higher education system.

At the federal and state levels, policy-makers should invest additional appropriations into supporting higher education, at the very least attempting to return appropriation levels to those of the early 2000s. Between 2003 and 2012, average state funding for public colleges decreased by 12 percent, with average per-student funding decreasing by 24 percent, dropping from \$6,211 per student to \$4,695 per student in 2012.<sup>65</sup> Although state appropriations have started to increase over the past few years, per-student appropriations remain lower than 2001 levels, with about 46 percent of higher education revenues coming from tuition compared with 30–35 percent in the early 2000s.<sup>66</sup> Declines in state appropriations relate to declines in institutional expenditures per student, which, at certain types of institutions, can make a big difference in the likelihood that a student graduates. Researchers have found that most of the decline in college completion rates over the past few decades at nonselective, public four-year colleges can be attributed to rising student-faculty ratios, although those shifts explain little of the variation in two-year college completion rates.<sup>67</sup> Given limited resources, states could prioritize increasing appropriations to schools that enroll more low-income

students and institutions that have experienced the biggest drops in per-pupil appropriations over the past decade. We caution, however, that the mixed effects of performance-based funding suggest that policies that differentially target institutions by student composition or student outcomes often have unintended consequences for equity and the types of credentials colleges encourage students to pursue.<sup>68</sup>

In addition to increased state appropriations in public higher education institutions, the federal government has the ability to increase investment in and availability of federal financial aid programs. The federal government has made some progress on this front, recently restoring “year round Pell Grants” (YRP), which allow recipients to access up to 50 percent of their annual award for summer studies (for a total academic year use of 150 percent of an award). Quasi-experimental research shows that YRP availability results in increased summer enrollment, higher associate’s degree graduation rates, and greater benefits for older students.<sup>69</sup> However, to the point that students often struggle to refile the necessary paperwork to access fall/spring semester federal financial aid, low-income students and students enrolling part time or living off campus may struggle to connect with financial aid offices to access YRP aid, motivating additional interventions to increase awareness of the program. States, localities, and institutions also have a role to play in providing financial aid to supplement federal investments, with many merit-based programs and place-based full-tuition “promise” programs positively affecting student enrollment and graduation.<sup>70</sup>

States and institutions also have opportunities to invest in targeted support programs and offer additional advising resources to students to mitigate the costs of college enrollment and increase the likelihood that students will succeed in the classroom. Programs such as the Accelerated Study in Associate Programs (ASAP) at the City University of New York (CUNY) community colleges combine institution-level investments in intensive advising and structured pathways with student financial support (such as subway cards, textbook assistance, and tuition waivers) that have significant effects on students’ persistence and degree attainment, as measured in a large-scale randomized controlled trial.<sup>71</sup> While access to high-quality advising can lead to substantial improvements in students’ postsecondary outcomes,<sup>72</sup> many college advisors are overworked and unable to address all students’ needs, and advising resources are often particularly limited at the broad access public institutions attended by most students.<sup>73</sup>

There are also some state policies that, at face value, target improving on-time graduation and students’ academic engagement but have unintended consequences. Excess credit hour (ECH) state policies act as a “stick” incentive

by charging higher tuition rates for credits students take beyond a certain threshold: for example, more than 140 credits in North Carolina or more than 125 percent of the credits required for a student's degree in Virginia.<sup>74</sup> While intended to incentivize students to graduate quickly, ECH policies have had no effect on on-time graduation rates and have increased the amount of debt students take on, particularly for low- and middle-income students.<sup>75</sup> Eliminating these policies would likely alleviate the negative effects on student borrowing and could free up resources to direct to proven strategies.

At the institution and faculty/course levels, colleges have the opportunity to implement informational campaigns and interventions to help buffer students from the cognitive stress of financial insecurity and improve students' sense of belonging on campus. One writing exercise invited freshmen to read letters from seniors reflecting on their first year and talking about how they came to develop a sense of community on campus; students participating in the intervention earned higher GPAs throughout college and the Black-White GPA gap was cut in half by their senior year of college.<sup>76</sup> This model has a proven track record scaled up. Implemented at a public four-year institution with low graduation rates as well as at a highly selective college, one study found randomly assigning freshman students to complete social belonging modules as part of their orientation resulted in economically disadvantaged students earning higher freshman GPAs and reporting more close mentors and college friends at the end of their freshman year.<sup>77</sup>

Other interventions have targeted how students perceive college culture and goals differently by their backgrounds. First-generation and low-income students, for example, feel a greater sense of belonging, perform better on academic tasks, and have lower cortisol levels when an institution emphasizes the collaborative nature of the college community.<sup>78</sup> Similar interventions have called out students' different backgrounds in panels and asked participants to reflect on how their backgrounds affected their college transition. First-generation freshman students who attended these "difference education" panels earned higher GPAs at the end of the year compared with their peers who attended a general information session.<sup>79</sup> While it is important to implement these interventions with fidelity and adapted to each institutional context (and to acknowledge that the bulk of this research to date has focused on younger students), these interventions have promising records of accomplishment and are a viable avenue for colleges and individual classes to pursue.<sup>80</sup>

Colleges might also invest in improved, targeted communications about the availability of student support services, such as tutoring, that are likely to have a positive effect on student learning. For example, one intervention

found that sending students postcards about peer tutoring programs on campus resulted in a 23 percent increase in tutoring attendance over the control group, with most students induced to attend multiple tutoring sessions.<sup>81</sup> The intervention was low-cost, at about \$4 to \$15 per student, but while the intervention succeeded in increasing student take-up of tutoring services, there was no effect on students' grades.<sup>82</sup> Behavioral interventions that address students' time-inconsistent preferences in signing up for tutoring can effectively change behavior, but the effectiveness of these interventions is limited by the quality of the services students are nudged to participate in.<sup>83</sup>

Improving student learning and the value of the college experience requires multifaceted solutions, including targeting policies that less obviously affect students' daily course engagement. The rising costs of college, challenges acquiring and maintaining aid, the changing landscape of who goes to college and where, and the vast inequality and psychological stress students experience at even the most well-resourced schools all point to policy solutions that improve the financial well-being of students so that they may fully dedicate themselves to their studies.

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#### ENDNOTES

- <sup>1</sup> National Center for Education Statistics, Digest of Education Statistics, "Table 302.10. Recent High School Completers and Their Enrollment in College, by Sex and Level of Institution: 1960 through 2016," [https://nces.ed.gov/programs/digest/d17/tables/dt17\\_302.10.asp](https://nces.ed.gov/programs/digest/d17/tables/dt17_302.10.asp).

- <sup>2</sup> Doug Shapiro, Afet Dundar, Faye Huie, et al., *Completing College: A National View of Student Completion Rates – Fall 2011 Cohort* (Herndon, Va.: National Student Clearinghouse Research Center, 2017).
- <sup>3</sup> Martha Bailey and Sue Dynarski, “Gains and Gaps: Changing Inequality in U.S. College Entry and Completion,” NBER Working Paper No. 17633 (Cambridge, Mass.: National Bureau of Economic Research, 2012).
- <sup>4</sup> National Center for Education Statistics, *Remedial Coursetaking at U.S. Public 2- and 4-Year Institutions: Scope, Experience, and Outcomes* (Washington, D.C.: National Center for Education Statistics, 2016), <https://nces.ed.gov/pubs2016/2016405.pdf>.
- <sup>5</sup> Eric P. Bettinger and Bridget Terry Long, “Addressing the Needs of Underprepared Students in Higher Education: Does College Remediation Work?” *Journal of Human Resources* 44 (3) (2009): 736–771; and Christopher Jepsen, “Basic Skills in California’s Community Colleges: Evidence from Staff and Self Referrals,” paper presented at the American Educational Research Association conference, May 2006, San Francisco, California.
- <sup>6</sup> Paco Martorell and Isaac McFarlin Jr., “Help or Hindrance? The Effects of College Remediation on Academic and Labor Market Outcomes,” *The Review of Economics and Statistics* 93 (2) (2011): 436–454; Juan Carlos Calcagno and Bridget Long, “The Impact of Postsecondary Remediation Using a Regression Discontinuity Approach: Addressing Endogenous Sorting and Noncompliance,” NBER Working Paper No. 14194 (Cambridge, Mass.: National Bureau of Economic Research, 2008); and Judith Scott-Clayton and Olga Rodriguez, “Development, Discouragement, or Diversion? New Evidence on the Effects of College Remediation Policy,” *Education Finance and Policy* 10 (1) (2015): 4–45.
- <sup>7</sup> Phillippe Belley and Lance Lochner, “The Changing Role of Family Income and Ability in Determining Educational Attainment,” *Journal of Human Capital* 1 (1) (2007): 37–89.
- <sup>8</sup> Eric Bettinger and Rachel Baker, “The Effects of Student Coaching: An Evaluation of a Randomized Experiment in Student Advising,” *Educational Evaluation and Policy Analysis* 36 (1) (2011): 3–19; and Andrew C. Barr and Benjamin L. Castleman, “Advising Students to and through College: Experimental Evidence from the Bottom Line Advising Program” (Boston: Bottom Line, 2016).
- <sup>9</sup> Thomas Bailey, Shanna Smith Jaggars, and Davis Jenkins, “What We Know about Guided Pathways” (New York: Teachers College Community College Research Center, Columbia University, 2015).
- <sup>10</sup> Gary Becker, *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education* (Chicago: University of Chicago Press, 1964).
- <sup>11</sup> Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus and Giroux, 2011); and B. J. Casey, Rebecca Jones, and Leah Somerville, “Braking and Accelerating of the Adolescent Brain,” *Journal of Research on Adolescence* 21 (1) (2011): 21–33.
- <sup>12</sup> Herbert Simon, *Models of Bounded Rationality* (Cambridge, Mass.: The MIT Press, 1982); and Daniel Kahneman, “A Perspective on Judgment and Choice: Mapping Bounded Rationality,” *American Psychologist* 58 (9) (2003): 697–700.



- <sup>13</sup> Amos Tversky and Daniel Kahneman, "Judgment under Uncertainty: Heuristics and Biases," *Science* 185 (4157) (1974): 1124–1131; and Daniel Kahneman and Amos Tversky, "Prospect Theory: An Analysis of Decision under Risk," *Econometrica* 47 (2) (1979): 263–291. For a more comprehensive overview of behavioral science insights, we recommend Kahneman, *Thinking, Fast and Slow*.
- <sup>14</sup> Richard Thaler and Shlomo Benartzi, "Save More Tomorrow: Using Behavioral Economics to Increase Employee Saving," *Journal of Political Economy* 112 (S1) (2004): 164–187.
- <sup>15</sup> Gal Zauberman and John Lynch, "Resource Slack and Propensity to Discount Delayed Investment of Time Versus Money," *Journal of Experimental Psychology* 134 (1) (2005): 23–37; and Stefano DellaVigna, "Psychology and Economics: Evidence from the Field," *Journal of Economic Literature* 47 (2) (2009): 315–372.
- <sup>16</sup> Daniel Read, George Loewenstein, and Shobana Kalyanaraman, "Mixing Virtue and Vice: Combining the Immediacy Effect and the Diversification Heuristic," *Journal of Behavioral Decision Making* 12 (4) (1999): 257–273.
- <sup>17</sup> George Ainslie, *Picoeconomics* (Cambridge: Cambridge University Press, 1992).
- <sup>18</sup> Kahneman and Tversky, "Prospect Theory"; and Simon Gächter, Henrik Orzen, Elke Renner, and Chris Starmer, "Are Experimental Economists Prone to Framing Effects? A Natural Field Experiment," *Journal of Economic Behavior and Organization* 70 (3) (2009).
- <sup>19</sup> Tversky and Kahneman, "Judgment under Uncertainty."
- <sup>20</sup> Dan Ariely, George Loewenstein, and Drazen Prelec, "Tom Sawyer and the Construction of Value," *Journal of Economic Behavior and Organization* 60 (2006): 1–10.
- <sup>21</sup> Richard Murphy and Felix Weinhardt, "Top of the Class: The Importance of Ordinal Rank," NBER Working Paper No. 24958 (Cambridge, Mass.: National Bureau of Economic Research, 2018).
- <sup>22</sup> William Samuelson and Richard Zeckhauser, "Status Quo Bias in Decision Making," *Journal of Risk and Uncertainty* 1 (1) (1988): 7–59; Richard Thaler and Cass Sunstein, *Nudge: Improving Decisions about Health, Wealth and Happiness* (London: Penguin Books, 2008); and Brigitte Madrian and Dennis Shea, "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior," *Quarterly Journal of Economics* 116 (4) (2001): 1149–1187.
- <sup>23</sup> Samuelson and Zeckhauser, "Status Quo Bias in Decision Making."
- <sup>24</sup> Mailchimp, "Email Marketing Benchmarks," <https://mailchimp.com/resources/email-marketing-benchmarks/>.
- <sup>25</sup> John Beshears, James Choi, David Laibson, and Brigitte Madrian, "Simplification and Saving," *Journal of Economic Behavior and Organization* 95 (2012): 130–145; and Sendhil Mullainathan and Eldar Shafir, *Scarcity: Why Having Too Little Means so Much* (New York: Times Books, 2002).
- <sup>26</sup> Peter Bergman and Todd Rogers, "The Impact of Defaults on Technology Adoption, and Its Underappreciation by Policymakers," Harvard Kennedy School Faculty Research Working Paper No. RWP17-021 (Cambridge, Mass.: Harvard Kennedy School, 2017).

- <sup>27</sup> Angela Boatman, Brent Evans, and Adela Soliz, “Understanding Loan Aversion in Education: Evidence from High School Seniors, Community College Students, and Adults,” *AERA Open* 3 (1) (2017): 1–16.
- <sup>28</sup> Social and Behavioral Sciences Team, *2016 SBST Project Abstracts* (Washington, D.C.: Executive Office of the President, National Science and Technology Council, 2016), <https://sbst.gov/download/2016%20Abstracts.pdf>.
- <sup>29</sup> Sandy Baum, Jennifer Ma, and Matea Pender, *Trends in Student Aid 2017* (New York: The College Board, 2017); and Robert Kelchen, Sara Goldrick-Rab, and Braden Hosch, “The Costs of College Attendance: Examining Variation and Consistency in Institutional Living Cost Allowances,” *The Journal of Higher Education* 88 (6) (2017): 947–971.
- <sup>30</sup> Mullainathan and Shafir, *Scarcity*; Lisa A. Gennetian and Eldar Shafir, “The Persistence of Poverty in the Context of Financial Instability: A Behavioral Perspective,” *Journal of Policy Analysis and Management* 34 (4) (2015): 904–936; and Frank Schilbach, Heather Schofield, and Sendhil Mullainathan, “The Psychological Lives of the Poor,” *American Economic Review* 106 (5) (2016): 435–440.
- <sup>31</sup> The authors thank Beverly Tatum for this important insight into how the cognitive stressors of students’ multiple identities combine to affect college persistence.
- <sup>32</sup> Anandi Mani, Sendhil Mullainathan, Eldar Shafir, and Jiaying Zhao, “Poverty Impedes Cognitive Function,” *Science* 341 (6149): 976–980.
- <sup>33</sup> Mesmin Destin and Ryan Svoboda, “Costs on the Mind: The Influence of the Financial Burden of College on Academic Performance and Cognitive Functioning,” *Research in Higher Education* 59 (3) (2018): 302–324.
- <sup>34</sup> *Ibid.*
- <sup>35</sup> Anuj Shah, Sendhil Mullainathan, and Eldar Shafir, “Some Consequences of Having Too Little,” *Science* 338 (6107) (2012): 682–685; and Abhijit V. Banerjee and Esther Duflo, *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty* (New York: Public Affairs, 2011).
- <sup>36</sup> National Center for Education Statistics, Digest of Education Statistics, “Table 302.30. Percentage of Recent High School Completers Enrolled in College, by Income Level: 1975 through 2016,” [https://nces.ed.gov/programs/digest/d17/tables/dt17\\_302.30.asp](https://nces.ed.gov/programs/digest/d17/tables/dt17_302.30.asp).
- <sup>37</sup> *Ibid.*; and U.S. Department of Education, Office of Postsecondary Education, *2016–2017 Federal Pell Grant Program End-of-Year Report* (Washington, D.C.: U.S. Department of Education, 2018), <https://www2.ed.gov/finaid/prof/resources/data/pell-data.html>.
- <sup>38</sup> Authors’ calculations from National Center for Education Statistics, 2012/2014 Beginning Postsecondary Students Longitudinal Study, <https://nces.ed.gov/surveys/bps/>.
- <sup>39</sup> Institute for Women’s Policy Research, “Fact Sheet” (Washington, D.C.: Institute for Women’s Policy Research, 2014), [https://iwpr.org/wp-content/uploads/wpallimport/files/iwpr-export/publications/C424\\_Student%20Parents\\_final.pdf](https://iwpr.org/wp-content/uploads/wpallimport/files/iwpr-export/publications/C424_Student%20Parents_final.pdf).

- <sup>40</sup> Baum et al., *Trends in Student Aid* 2017.
- <sup>41</sup> Kelli Bird and Benjamin Castleman, “Here Today, Gone Tomorrow? Investigating Rates and Patterns of Financial Aid Renewal among College Freshmen,” *Research in Higher Education* 57 (4) (2016): 395–422; and Anthony P. Carnevale, Nicole Smith, Michelle Melton, and Eric W. Price, *Learning While Earning: The New Normal* (Washington, D.C.: Center on Education and the Workforce Report, Georgetown University, 2015).
- <sup>42</sup> Benjamin Castleman, *The 160-Character Solution* (Baltimore: Johns Hopkins University Press, 2015).
- <sup>43</sup> Robert Shireman and Joshua Price, “Prepare for Class, Attend, and Participate!” in *Decision Making for Student Success*, ed. Benjamin Castleman, Saul Schwartz, and Sandy Baum (New York: Routledge Press, 2015), 124–142; and D. R. Marburger, “Absenteeism and Undergraduate Exam Performance,” *Journal of Economic Education* 32 (2) (2001): 99–109.
- <sup>44</sup> For an overview of behavioral science insights and college course engagement, see Shireman and Price, “Prepare for Class, Attend, and Participate!”
- <sup>45</sup> Institute for Women’s Policy Research, “Fact Sheet.”
- <sup>46</sup> George D. Kuh, Jillian Kinzie, John H. Schuh, and Elizabeth J. Whitt, *Student Success in College: Creating Conditions That Matter* (San Francisco: Jossey-Bass, 2005).
- <sup>47</sup> Peter Collier and David Morgan, “‘Is That Paper Really Due Today?’: Differences in First-Generation and Traditional College Students’ Understandings of Faculty Expectations,” *Higher Education* 55 (4) (2008): 425–446.
- <sup>48</sup> Annette Lareau, *Unequal Childhoods: Race, Class, and Family Life*, 2nd ed. (Oakland: University of California Press, 2003).
- <sup>49</sup> Susan M. Dynarski and Judith E. Scott-Clayton, “The Cost of Complexity in Federal Student Aid: Lessons from Optimal Tax Theory and Behavioral Economics,” *National Tax Journal* 59 (2) (2006): 319–356.
- <sup>50</sup> Michael S. Kofoed, “To Apply or Not to Apply: FAFSA Completion and Financial Aid Gaps,” *Research in Higher Education* 58 (1) (2017): 1–39.
- <sup>51</sup> Bird and Castleman, “Here Today, Gone Tomorrow?”
- <sup>52</sup> Judith Scott-Clayton, “The Shapeless River: Does a Lack of Structure Inhibit Students’ Progress at Community Colleges?” in *Decision Making for Student Success*, ed. Castleman et al., 102–123.
- <sup>53</sup> Bird and Castleman, “Here Today, Gone Tomorrow?”
- <sup>54</sup> *Ibid.*
- <sup>55</sup> Lauren Schudde and Judith Scott-Clayton, “Pell Grant as Performance-Based Scholarships? An Examination of Satisfactory Academic Progress Requirements in the Nation’s Largest Need-Based Aid Program,” *Research in Higher Education* 57 (8) (2016): 943–967.
- <sup>56</sup> Raj Chetty, John N. Friedman, Emmanuel Saez, et al., “Mobility Report Cards: The Role of Colleges in Intergenerational Mobility,” NBER Working Paper No. 23618 (Cambridge, Mass.: National Bureau of Economic Research, 2017).

- <sup>57</sup> Gregory M. Walton and Geoffrey L. Cohen, "A Question of Belonging: Race, Social Fit, and Achievement," *Journal of Personality and Social Psychology* 92 (1) (2007).
- <sup>58</sup> Vincent Tinto, "Dropout from Higher Education: A Theoretical Synthesis of Recent Research," *Review of Educational Research* 45 (1) (1975): 89–125.
- <sup>59</sup> Claude M. Steele and Joshua Aronson, "Stereotype Threat and the Intellectual Test Performance of African-Americans," *Journal of Personality and Social Psychology* 69 (5) (1995): 797–811; and Jean-Claude Croizet and Theresa Claire, "Extending the Concept of Stereotype Threat to Social Class: The Intellectual Underperformance of Students Low Socioeconomic Backgrounds," *Personality and Social Psychology Bulletin* 24 (6) (1998): 588–594.
- <sup>60</sup> Kevin McClure, Andrew Ryder, and Andrew Mauk, "It All Adds Up: Examining and Enhancing Campus Climate for Affordability at a Four-Year University," *Journal of Student Financial Aid* 47 (2) (2017).
- <sup>61</sup> Krista M. Soria and Michael J. Stebleton, "Social Capital, Academic Engagement, and Sense of Belonging among Working-Class College Students," *College Student Affairs Journal* 31 (2) (2013): 139–153; and Chetty et al., "Mobility Report Cards."
- <sup>62</sup> Lareau, *Unequal Childhoods*; and Jenny Stuber, *How Class and Culture Matter in Higher Education* (Landham, Md.: Lexington Books, 2011).
- <sup>63</sup> Leasha M. Barry, Cynthia Hudley, Melissa Kelly, and Su-Je Cho, "Differences in Self-Reported Disclosure of College Experiences by First-Generation College Student Status," *Adolescence* 44 (173) (2009): 55–68.
- <sup>64</sup> Stuber, *How Class and Culture Matter in Higher Education*.
- <sup>65</sup> Government Accountability Office, "Higher Education: State Funding Trends and Policies on Affordability" (Washington, D.C.: Government Accountability Office, 2014), <https://www.gao.gov/assets/670/667557.pdf>.
- <sup>66</sup> State Higher Education Executive Officers, "State Higher Education Finance, FY 2017" (Boulder, Colo.: State Higher Education Executive Officers, 2017), [https://sheeo.org/wp-content/uploads/2019/02/SHEEO\\_SHEF\\_FY2017\\_FINAL-1.pdf](https://sheeo.org/wp-content/uploads/2019/02/SHEEO_SHEF_FY2017_FINAL-1.pdf).
- <sup>67</sup> John Bound, Michael Lovenheim, and Sarah Turner, "Why Have College Completion Rates Declined? An Analysis of Charging Student Preparation Collegiate Resources," *American Economic Journal: Applied Economics* 2 (3) (2010): 129–157.
- <sup>68</sup> Amy Li and Alec Kennedy, "Performance Funding Policy Effects on Community College Outcomes: Are Short-Term Certificates on the Rise?" *Community College Review* 46 (1) (2017): 3–39; and Nicholas Hillman and Daniel Corral, "The Equity Implications of Paying for Performance in Higher Education," *American Behavioral Scientist* 61 (14) (2017): 1757–1772.
- <sup>69</sup> Vivian Liu, "The Impact of Year-Round Pell Grants on Academic and Employment Outcomes of Community College Students," Community College Research Center Working Paper No. 95 (New York: Teachers College Community College Research Center, Columbia University, 2017).
- <sup>70</sup> For merit-based programs, see Timothy J. Bartik, Brad J. Hershbein, and Marta Lachowska, "The Effects of the Kalamazoo Promise Scholarship on College Enrollment, Persistence, and Completion," Upjohn Institute Working Paper No. 15-229

- (Kalamazoo, Mich.: W. E. Upjohn Institute for Employment Research, 2017), <https://doi.org/10.17848/wp15-229>; and Lindsay C. Page, Jennifer Iriti, Danielle Lowry, and Aaron Anthony, "The Promise of Place-Based Investment in Postsecondary Access and Success: Investigating the Impact of the Pittsburgh Promise," *Education Finance and Policy* (forthcoming 2019). For "promise" programs, see Sue Dynarski, "Building the Stock of College-Educated Labor," *Journal of Human Resources* 43 (3) (2008): 576–610.
- <sup>71</sup> Susan Scrivener, Michael J. Weiss, Alyssa Ratledge, et al., *Doubling Graduation Rates: Three-Year Effects of CUNY's Accelerated Study in Associate Programs (ASAP) for Developmental Education Students* (New York: MDRC, 2015), <https://www.mdrc.org/publication/doubling-graduation-rates>.
- <sup>72</sup> Joshua Angrist, Daniel Lang, and Philip Oreopoulos, "Incentives and Services for College Achievement: Evidence from a Randomized Trial," *American Economic Journal: Applied Economics* 1 (1) (2009): 136–163; Barr and Castleman, "Advising Students to and through College"; and Eric P. Bettinger, Bridget Terry Long, Philip Oreopoulos, and Lisa Sanbonmatsu, "The Role of Application Assistance and Information in College Decisions: Results from the H&R Block FAFSA Experiment," *Quarterly Journal of Economics* 127 (3) (2012): 1205–1242.
- <sup>73</sup> Scott-Clayton, "The Shapeless River."
- <sup>74</sup> Dennis Kramer, Michael Holcomb, and Robert Kelchen, "The Costs and Consequences of Excess Credit Hours Policies," *Educational Evaluation and Policy Analysis* 40 (1) (2017): 3–28.
- <sup>75</sup> Ibid.
- <sup>76</sup> Gregory M. Walton and Geoffrey L. Cohen, "A Brief Social-Belonging Intervention Improves Academic and Health Outcomes of Minority Students," *Science* 331 (6023): 1447–1451.
- <sup>77</sup> David S. Yeager, Gregory M. Walton, Shannon T. Brady, et al., "Teaching a Lay Theory before College Narrows Achievement Gaps at Scale," *Proceedings of the National Academy of Sciences of the United States of America* 113 (24) (2016): E3341–E3348.
- <sup>78</sup> Nicole M. Stephens, Stephanie A. Fryberg, Hazel Rose Markus, et al., "Unseen Disadvantage: How American Universities' Focus on Independence Undermines the Academic Performance of First-Generation College Students," *Journal of Personality and Social Psychology* 102 (6) (2016): 1178–1197; and Nicole M. Stephens, Sarah S. M. Townsend, Hazel Rose Markus, and L. Taylor Phillips, "A Cultural Mismatch: Independent Cultural Norms Produce Greater Increases in Cortisol and More Negative Emotions among First-Generation College Students," *Journal of Experimental Social Psychology* 48 (2012) (6): 1389–1393.
- <sup>79</sup> Nicole M. Stephens, MarYam G. Hamedani, and Mesmin Destin, "Closing the Social-Class Achievement Gap: A Difference-Education Intervention Improves First-Generation Students' Academic Performance and All Students' College Transition," *Psychological Science* 25 (4) (2014): 943–953.
- <sup>80</sup> David S. Yeager and Gregory M. Walton, "Social-Psychological Interventions in Education: They're Not Magic," *Review of Educational Research* 81 (2) (2011): 267–300.

<sup>81</sup> Todd Pugatch and Nicholas Wilson, “Nudging Study Habits: A Field Experiment on Peer Tutoring in Higher Education,” *Economics of Education Review* 62 (2018): 151–161.

<sup>82</sup> Ibid.

<sup>83</sup> Angrist et al., “Incentives and Services for College Achievement”; and Pugatch and Wilson, “Nudging Study Habits.”