CHAPTER 5:
THE ROLE OF REMEDIAL AND DEVELOPMENTAL COURSES IN ACCESS AND PERSISTENCE

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The State of College Access and Completion: Improving College Success for Students from Underrepresented Groups

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Abstract

In addition to the monetary benefits resulting from postsecondary attainment, research has also shown non-monetary benefits, such as better health and lower rates of government dependency and incarceration. Yet a significant number of high school graduates, as well as older students, are underprepared for college-level coursework and require remedial and developmental courses. Such courses are designed to assist students in gaining skills sufficient to engage and advance in postsecondary courses in order to improve their standing in the labor market and enhance their quality of life. However, participation in remedial and developmental courses may negatively impact college academic program choice, persistence, and completion. The costs of remedial programs are substantial for institutions as well. Further, the broad effects of these programs remain unknown. This chapter addresses what is known, as well as the limitations of that knowledge, regarding the impacts of remediation on student outcomes. It also outlines needs for future research on remedial and developmental programs, including the use of more rigorous research designs to better target causal impact, ways to utilize existing data for such analyses, how enhanced data can be generated, and continued improvements to the alignment of state secondary and postsecondary curricula and expectations.

I. INTRODUCTION

Over the past 20 years, increasing numbers of students are entering or returning to college underprepared for college-level coursework (Strong American Schools, 2008). Recent estimates suggest that only one-quarter to one-third of America's high school students are at least minimally prepared for college academically, and this proportion is even smaller among Black and Hispanic students (20 percent and 16 percent, respectively) (Chen, Wu, & Tasoff, 2010; Greene & Forster, 2003).[1] In addition, wide variation exists in the types of courses students take in high school and how well they perform, both of which are important predictors of future college success (Adelman, 1999; 2006). As such, academically under-prepared students enrolling in college are frequently required to enroll in remedial and developmental courses which offer material below "college-level."[2] Estimates suggest that around 40 percent of all first-year students in college today are taking some form of remedial coursework; however, this figure can be as high as 6 out of 10 students at some postsecondary institutions (NCES, 2003; Bettinger & Long, 2009b; Bailey, 2009).

Traditionally, developmental education has intended to address whatever was missed in high school (Education Commission of the States, 2012). The general purpose of these courses is to provide academically underprepared students with the skills they need to succeed in college and the labor market. Upon enrolling in college, however, students are often surprised to learn they need to take such courses, thereby illuminating an important disconnect between secondary (K-12) and postsecondary education. While many students and families believe that meeting high school graduation requirements will adequately prepare them for college, in reality students often need to take a more rigorous, demanding

[1] The National Center for Education Statistics (NCES) defines "high-level" high school academic coursework as four years of English; three years of mathematics (including at least one year of a course higher than algebra II); three years of science; three years of social studies; and two years of a single non-English language (Chen, Wu, & Tasoff, 2010). Similarly, Greene and Forster (2003) define being minimally "college ready" as: (i) graduating from high school, (ii) having taken four years of English, three years of math, and two years of science, social science, and foreign language, and (iii) demonstrating basic literacy skills by scoring at least 265 on the reading National Assessment of Educational Progress (NAEP).

[2] In an effort to avoid possible negative connotations associated with the term "remedial," practitioners often use the term "developmental education" to describe the courses and services offered to students below college-level (Bailey, Jeong, & Cho, 2010); however, the terms "remedial" and "developmental" are often used interchangeably in the literature, and as such, throughout this chapter.

secondary school curriculum than that required by the district or state if they are to avoid remedial courses in college. A lack of alignment between the K-12 and postsecondary education systems frequently results in confusing messages to students and their parents about how and what students should do to be able to enter and succeed in college (Venezia, Kirst, & Antonio, 2003).

While remediation plays an increasingly important role in the lives of students and the colleges and universities they attend, there are growing debates about its effectiveness and how it should be delivered. Debate over who should offer remediation (high schools, two-year colleges, or four-year colleges) and how it should be offered, if at all, are important questions for policymakers struggling to address issues of college access and success, particularly for underrepresented groups. Proponents of remediation at the postsecondary level assert that helping students to accumulate skills they either missed or forgot in high school should allow them to persist through to graduation when they might not otherwise have done so. The academic supports commonly offered in remedial courses may help integrate students into their academic environment, leading to higher rates of persistence and completion of their degrees. Theories of student integration and engagement suggest that students who feel connected to their institution (either academically, socially, or both) are more likely to stay enrolled than those that feel disconnected (Tinto, 1975; Kuh et al., 1991; Astin, 1993). Critics, however, argue that college is fundamentally not the place to be focusing on skills not learned in high school, and that remedial courses may negatively impact college major choice, persistence, and completion, particularly given that remedial courses rarely count toward a student's graduation requirements.

In this chapter, we describe the current landscape of remedial and developmental education in America's colleges and detail what is known from existing research about the best ways to address the needs of academically underprepared students, as well as discuss the limitations of this knowledge when it comes to creating policy. We outline the need for future research on remedial and developmental programs, including the use of more rigorous research designs to better target causal impact, ways to utilize existing data for such analyses, and the roles governments and institutions should take in addressing the needs of underprepared students.

II. THE PROBLEM: UNDERPREPARED STUDENTS IN HIGHER EDUCATION

Non-selective public institutions provide the bulk of remediation, and serve as the point of entry for 80 percent of four-year students and virtually all two-year students (Bettinger & Long, 2009b). In addition to recent high school graduates, a substantial number of adult students, including recent immigrants or workers displaced by structural shifts in the labor market, enroll in remedial and developmental courses.

Descriptive studies suggest that students placed into remedial courses have lower persistence rates than students placed into college-level courses (Bettinger and Long, 2005; Adelman, 2006; Bailey, 2009; Complete College America, 2012). Typically, students are placed into remedial courses in math, English, or writing based on an exam or assessment taken when a student first arrives on campus. Colleges then assign students to a specific course, oftentimes a remedial course, based on their scores on the placement exam.[3] The vast majority of institutions require students to complete their remedial courses before they are allowed to enroll in college-level courses (NCES, 2003). Thus, for students in need of multiple remedial courses in the same subject, this could mean over a year of course-taking before the remedial requirements are fulfilled. However, less than 50 percent of students referred to remediation actually complete the entire sequence to which they are referred (Bailey, Jeong, & Choo, 2009). This percentage is even lower for men, older students, African American students, part-time students, and students in vocational programs. The students assigned to the lowest levels of math remediation are the least likely to advance into college-level courses, with only 10 percent of this group ever completing a college-level course (Bailey, Jeong, & Choo, 2009).

These low rates of college persistence can be explained by the numerous challenges facing academically-underprepared students, both inside the classroom and out. Academic difficulties are often

[3] Placement into mathematics remediation is more common than placement into English (i.e., reading and/or writing) remediation, but participation in English remediation may be more serious as some evidence suggests that reading and writing deficiencies have more negative effects on a student's success (Bailey, Jeong, & Choo, 2009).

discouraging, leading students to become frustrated and daunted by the whole package of academic, social, and financial adjustments to college (Raab & Adam, 2005). Students struggling in the classroom may also experience an attached stigma of not being as "smart" or college-ready as their peers, potentially leading to lower self-esteem, higher frustration, and higher drop-out rates (Bettinger & Long, 2009a; Jacob & Lefgren, 2004). Remedial and developmental courses may also slow students down in their progress toward a degree, and factors that lengthen the time to degree are likely to reduce the probability of degree completion (Bailey, 2009).

The Costs of Remediation

In 2006, the Alliance for Excellent Education estimated that the cost of the delivery of remediation nationwide was $1.4 billion in the form of direct costs to students and institutions. Additionally, there could be further losses in the lost earning potential for those remedial students who may be more likely to drop out of college without completing a degree. Another recent study estimated the annual cost of remediation at $1.9 to $2.3 billion at community colleges and another $500 million at four-year colleges (Strong American Schools, 2008). Several states report costs of tens to hundreds of millions of dollars annually to support remedial programs (Collins, 2009). Additionally, students must shoulder the tuition costs of the courses. In most postsecondary institutions, remedial and developmental courses are typically offered for credit and will count toward a student's overall GPA, but rarely are they counted toward graduation requirements. While expensive, however, it may be relatively less expensive for institutions to provide remedial courses compared to non-remedial courses. Two primary reasons for the cost differences are larger class sizes and the higher prevalence of adjunct, lower-paid instructors in remedial courses (Phipps, 1998).

III. ADDRESSING THE PROBLEM: REMEDIAL AND DEVELOPMENTAL EDUCATION

The challenges of comparing remedial to non-remedial students

While remedial courses are offered at the overwhelming majority of postsecondary institutions in the U.S., states and colleges know little about whether their remediation programs are successful. Because students who are placed in remedial courses differ from those who are not placed into remediation, one would expect these students to be less likely to persist and complete a degree even in the absence of remediation. Therefore, one must develop a way to separate the effects of lower preparation from the effects of being placed in a remedial course. Simply contrasting the average outcomes of these two different groups ignores the problem of selection and tells us nothing about whether differences in student outcomes are actually *caused* by students' enrollment in remedial classes, or whether these differences are instead explained by lower levels of academic preparation prior to ever enrolling in remedial courses. Fortunately, the recent availability of new data sources has prompted several large-scale studies that attempt to address these selection problems.

Does remediation work for those on the margin of needing the courses?

Mixed results from prior research suggest that the causal effect of remediation on student outcomes is not yet fully understood. While some studies find negative effects from being placed into a remedial course on a student's educational progress and degree attainment, other studies find no effect or even slightly positive effects. These inconsistent findings may be explained partly by the fact that much of this previous research has focused students just on the margin of needing remedial courses (i.e. scoring just below the cut off for college-level courses). By focusing on these marginal students, researchers are better able to isolate the causal effects of remedial courses on student academic outcomes through the use of quasi-experimental research designs. For example, in their 2009 study, Bettinger and Long examine the effects of remediation in Ohio. By exploiting institutional variation in placement policies and using distance from a student's home to the nearest four-year college as an instrument for college choice (and thereby placement), the authors compare academically-similar students who had different experiences with remedial courses. The authors find that remedial students at Ohio colleges were more likely to persist in college and to complete a bachelor's degree in comparison to students with similar test scores

and backgrounds who were not required to take the courses.[4] Alternatively, Attewell *et al.* (2006), uses propensity-score matching, another quasi-experimental research technique, to estimate the effects of remediation on student outcomes. This study uses national data from the National Education Longitudinal Study of 1988 (NELS:88) to compare observationally-similar students, half of whom had taken remedial courses and half of whom had not. Their results suggest that, on average, students in remedial courses were less likely to receive a bachelor's degree but no less likely to receive an associate's degree or certificate.

Due to the placement cutoffs commonly used to assign students to remedial courses, a popular quasi-experimental research method used in studies of remedial education is regression discontinuity (RD) design. Assuming that students who score just above and below the pre-set cutoff on a remedial placement exam have near similar ability, one can obtain a causal estimate of the effects of remedial placement on subsequent outcomes for those students at the margins of passing (Shadish et al., 2002). Calcagno and Long (2008) use this strategy to examine the effects of remediation in Florida. The results suggest that remediation might promote early persistence in college, but does not necessarily help community college students make long-term progress towards a degree. More specifically, students on the margin of requiring math remediation were slightly more likely to persist to their second year of college than their non-remedial peers. However, students in need of reading remediation were slightly less likely to pass their subsequent college-level English composition than their peers who did not require a remedial reading course. Martorell and McFarlin (2011) use a similar method to examine the impact of remediation in Texas; during the time period of their study Texas had a single placement exam and cutoff score. They find that remediation had little effect on persistence, degree completion, or a range of other educational outcomes. In addition, they also found no effect on labor market earnings. Generally, their estimates were small and statistically insignificant.

[4] Bettinger & Long (2009) focuses on degree-seeking, traditional-age, full-time undergraduates in Ohio's public colleges who were at the margins of placement into remediation.

How do the effects of remediation differ by type of student?

The mixed results from prior studies suggest that the causal effects of remedial courses on student outcomes are mixed at best for students at the margin of passing out of remediation. Little is known about how these effects might vary by age, gender, or prior academic preparation. Additional work by Long and Calcagno (2010) focusing on Florida indeed finds that the effects of remediation differ by student background and demographics. Women experienced more positive effects from placement into remediation than men. This gender difference is consistent with other studies that have found females to be more positively influenced by interventions (Belfield et al., 2006).

Another interesting pattern observed in Florida was that older students placed into remediation realized more positive effects in a host of outcomes in comparison to younger students in remediation (Long & Calcagno, 2010). One potential explanation for this finding is that older students are more focused or ready to take advantage of "refresher" courses. It may also be the case that older students have a greater need for developmental courses because they have been out of high school for a longer period. Therefore, older students who score high enough on the placement exam to just barely pass out of remediation might actually benefit from taking the courses anyway, regardless of placement status.

Family income also appears to be related to the effectiveness of remediation. In Florida, Pell Grant recipients in remediation experienced more negative outcomes than their peers in remediation not receiving Pell Grants in terms of persistence, associate degree completion, transfer rates, and credits earned (Long & Calcagno, 2010). Because income is often highly correlated with high school quality, the underlying cause of these differences may be academic preparation. Lower-income students are more likely to attend high schools with less rigorous college preparatory curricula. However, it may also be that affordability interacts with performance in remediation and subsequent college coursework. While low-income students receive the Pell Grant, the Pell Grant usually does not cover the full costs of their education. The patterns suggest the need for further investigation of the interaction of financial need and experiences within and after remediation.

How do the effects of remediation differ by level of prior preparation?

The aforementioned studies were limited to focusing on students just on the margin of needing remedial courses, and so little is known about the effects of remediation on students with much lower levels of preparation. Research by Boatman and Long (2010) expands the literature by examining the impact of remedial and developmental courses on the academic outcomes of students with varying preparation levels. They focus on students who began at a public college or university in Tennessee in fall 2000. Due to the state's multi-tiered system in which students may be assigned into one of four levels of math and one of three levels of reading or writing, they are able to examine the effects of multiple levels of remediation, from students who need only one course to those who need several courses.

The results suggest that remedial and developmental courses do differ in their impact on student outcomes by the level of student preparation (Boatman & Long, 2010). The largest negative effects were found for students on the margin of needing remediation: in comparison to their peers placed in college-level courses, students assigned to the highest-level remedial math, reading, and writing courses were less likely to complete a college degree in six years compared to their peers assigned to college-level courses. However, for students assigned to the lowest level remedial courses, the negative effects of remediation were much smaller and sometimes positive compared to their peers assigned to the next highest course. For example, students placed in the lowest levels of remedial writing persisted through college and attained a degree at higher rates than their peers who started in the next highest level course (Boatman & Long, 2010).

In summary, these results suggest the effects of remediation differ by preparation level, and that more, rather than less, remediation may be beneficial for students with weaker academic preparation. This study, along with others (e.g., Bettinger & Long, 2009b), also suggest that writing (or English) remediation may have more positive effects than math remediation. The skills obtained through remedial writing courses may be so fundamental to success in other courses that the acquisition of these skills improves academic performance and persistence in the long term.

Redesigning How Remediation is Offered

Given the growing numbers of students in need of remediation, yet the small, mixed academic success of students in these courses, an increasing number of institutions are beginning to re-think the ways in which they offer and teach their remedial and developmental courses. Redesigning developmental courses can take a number of purposes and forms. Rutschow and Schneider (2011) distill the multitude of redesign efforts into four types of interventions: (a) strategies targeted to students *before* they enter college, (b) interventions that shorten the timing or content of remedial courses, (c) programs that combine basic skill attainment with college-level coursework (mainstreaming), and (d) supplemental programs such as tutoring, advising, or participation in targeted sections outside of class. One program, for example, that combines basic skill attainment with college-level coursework is Washington State's Integrated Basic-Education Skills Training (I-Best) Program. While Deborah Bragg's chapter points to this program as an exemplar in promoting educational pathways for non-traditional students, others have frequently cited this program as an example of a highly successful innovation in developmental education. The I-Best Program combines instruction in basic skills with college-level material, all taught jointly by remedial instructors and college-level faculty. Evaluations of the I-Best program show higher rates of credit accumulation among recipients over time, as well as higher rates of persistence to the second year (Jenkins et al., 2009). These positive early findings have helped make the I-Best program a model which other institutions are beginning to alter and adopt for their campuses.

In the last several years, a host of states and individual institutions have received financial support from government and private sources to provide incentives for redesigning and assessing alternative approaches to the ways that they offer remedial and developmental education (Couturier, 2011; Carnegie Foundation, 2012; Zachry & Schneider, 2010). Remedial courses are structured traditionally in a 15-week, semester-long lecture or seminar format in which a student takes one remedial course in a given subject before moving on to the next course in the sequence. An increasing number of redesign efforts now incorporate the innovative use of learning technology into the classroom such as self-directed learning labs, online-learning models, and the use of high-tech classrooms (Epper & Baker, 2009). These

newer models of remediation attempt to better target students' academic needs and help them to move more quickly through their remedial courses. Research suggests that students enrolled in condensed courses, self-paced courses, and/or mainstreamed developmental courses show higher rates of persistence than students taking traditional developmental courses, yet causal questions about the effects of these programs on student outcomes remain unanswered (Jenkins, Speroni, Belfield, Jaggars, & Edgecombe, 2010; Epper & Baker, 2009; Zachry, 2008; Edgecombe, 2011).

Other institutions have tried overhauling the entire structure and curriculum of their remedial courses. In 2007-08, the Tennessee Board of Regents implemented a redesign of remediation at four of the public college campuses using grants from the National Center for Academic Transformation (NCAT) with the goal of decreasing the time students spent in remedial courses to ultimately improve persistence rates. While the specific details of each institution's course redesign efforts differed, chief among the changes was a shift to using learning technology, both in and out of the classroom, to enable the students to work at their own pace and to focus their attention specifically on the particular skills in which they were deficient (Twigg, 2009). In her paper examining the effects of these developmental courses redesign efforts, Boatman (2012) employs a regression discontinuity research design to provide causal estimates of the effects of the redesigned courses on the subsequent academic outcomes of students placed in remediation. She concludes that students exposed to redesigned developmental mathematics courses had more positive outcomes than similar students from both other, non-redesign institutions and from prior cohorts at the same institutions. The largest positive effects on persistence occurred at Austin Peay State University, which eliminated its developmental math courses entirely and created two core college-level courses, *Fundamentals of Mathematics* and *Elements of Statistics*, which were linked to additional tutoring workshops. The results of this research suggest that the instruction and delivery methods of remedial courses may actually *cause* student academic outcomes to improve.

In recent years additional states have begun to consider redesigning their developmental courses, although these redesign efforts have yet to be evaluated. For example, in July 2011, Georgia received a $1 million Completion Innovation Challenge Grant to pilot innovative remediation programs at four state

institutions. These new courses will use computer-based assessments to refine placement into remedial courses, modularize the curriculum and provide learning supports for students requiring remediation.

Other Efforts to Address the Needs of Academically Underprepared Students

While remedial and developmental courses are the most prominent tool currently used to improve college success for academically underprepared students, other increasingly popular strategies focus on mentoring and advising models, financial incentives, partnerships with students' current employers, and childcare/transportation support. The key idea behind these supports is that these students face not only academic barriers, but also barriers that transcend the basic academic skills upon which remediation focuses.

The research on many of these support programs remains mixed, with small positive effects in the short term, but few lasting long-term impacts. A number of random assignment evaluations of educational interventions have focused on enhancing student services. In one such study, students randomly assigned to receive financial incentives and increased availability to academic counseling were slightly more likely to stay in school into the second semester and more likely to register for school once these supports had ended, but did not realize any long-run benefits after the first year (Scrivener & Weiss, 2009). A second study focused on students randomly assigned to participate in a "student success course" designed to provide college information, time management, motivation, and study skills (Weis et al., 2011). In the short-run, the program helped students to exit probation and acquire more credits. However, after four-years, there did not appear to be any significant improvement in students' academic outcomes (Weiss et al., 2011).

Avoiding the Need for Remediation

Another tactic some states and institutions are taking is to try to avoid the need for remediation altogether through the use of early placement testing. Such programs administer remediation placement exams to high school students in order to provide them with early signals that they may lack

competencies critical to success in college. Most often this testing is done during the 10th or 11th grade year. The tests are designed to improve the information high school students have regarding their preparation for college and encourage those who fall short to take additional coursework in their senior year. With assistance from their teachers, counselors, and parents, students can then determine what courses to take while still in high school in order to avoid college remediation. In California, the Early Assessment Program (EAP) provides high school juniors with information about their academic readiness for coursework at California State University campuses. A recent evaluation of the program found that participation in the Early-Assessment Program reduced a student's probability of needing remediation in college by 6.2 percentage points in English and 4.3 percentage points in math (Howell, Kurlaender, and Grodsky, 2010). The authors conclude that EAP increased students' academic preparation in high school but did not discourage poorly-prepared students from applying to college. This research suggests the promise of early assessment programs in reducing the need for remediation.

IV. WHAT IS NOT KNOWN

The existing research suggests that the effects of remediation are considerably nuanced: remedial courses appear to help or hinder students differently by state, institution, background, and level of academic preparedness. The mixed conclusions of the existing research presents an interesting puzzle about why remediation can have such different effects. Future research needs to further systematically explore the effects of remedial programs on sub-populations of students, particularly by age and level of prior academic preparation. Only by first identifying those sub-groups of students for whom remedial programs appear to be helping or hindering can administrators, practitioners, and policymakers begin to better design and implement effective remediation programs more broadly. Additionally, the research literature needs more examples of successful remedial interventions at both the intuitional and state level in order to better identify those policies and practices which produce the largest learning and persistence

gains for students. Much more research is needed to determine the most promising, cost-effective ways to improve remediation.

What are the Best Practices for Colleges and Universities?

While the results cited in this chapter give a general sense of the impact of remediation, it may be the case that certain types of instruction and supports are more beneficial than others. Innovative approaches in the instruction and delivery of remedial courses, such as those described earlier, are among the more promising trends in higher education today. Further research is needed to identify which of these practices are the most effective in remediation programs. The literature highlights factors that *might* matter in the success of a remediation program but few studies use rigorous methods to document best practices. Some suggest that the most promising strategies to help students build their skills in high school, integrate remedial students into college-level courses, and provide opportunities for the development of skills for the workforce (Zachry & Schneider, 2010). Others assert more work is needed to compare the relative effectiveness of different models of delivery (Parker, Bustillos, & Behringer, 2010).

More research is also needed on the placement process itself. There is a lack of consensus of what it means to be prepared for college-level work, and as such, there are differing views of what would necessitate placing a student in a remedial or developmental course. Among two-year colleges, 92 percent of institutions use some kind of standardized placement exam to assign students to remedial or developmental courses (Parsad, Lewis, & Greene, 2003), but the exact cutoffs and test used differs widely.[5] As discussed, remedial courses may be more or less effective for students depending on the severity of their academic needs. Furthermore, recent research indicates that these college placement tests have little correlation with students' future academic success, raising serious questions of how then to assess students remedial needs (Burdman, 2012). Several states, such as California mentioned earlier, are

[5] The most widely used placement exams are the Computerized Adaptive Placement Assessment and Support Systems (COMPASS) and the Assessment of Skills for Successful Entry and Transfer (ASSET), each published by ACT, Inc.

moving to using placement tests to assess students' needs while still in high school. Wyoming recently adopted a measure calling for the development of a computer-adaptive college placement exam to be given to all students in grades 11 and 12, which will help students to identify and address their academic needs before arriving at college (Legislature of the State of Wyoming, 2012).

More information is also needed to understand how instructors are used in remedial and developmental courses, including adjunct faculty, and professional development for instructors (Zachry & Schneider, 2010). One reason remedial courses tend to be less costly than college-level classes is that adjunct instructors, who cost less than full-time faculty, are more likely to be assigned to teach remedial courses. Additionally, class sizes in developmental courses have traditionally been larger than college-level courses. However, some research suggests that among all college students, those who have adjuncts as instructors do worse in terms of educational outcomes (Bettinger & Long, 2010). Moreover, larger class sizes, especially for underprepared students who have already had past trouble engaging with material, may be detrimental to progress. Increasingly, institutions are beginning to think much more deliberately about how remedial courses are offered and conducted, in terms of instruction, pedagogy, format, and size.

Where Should Remediation Happen? State Policy Questions

Given that states differ in which public institutions offer remedial courses and how remediation is structured and delivered, there is little consensus as to which institutions are most effective in offering these programs. While many states offer remedial courses at either their two- and four-year institutions, an increasing number limit the classes to only their two-year institutions. Although Florida first limited remediation at public colleges and universities to the two-year schools in 1985 (with the exception of historically black colleges), other states have only more recently adopted this type of policy shift. New York's decision to phase out most remedial education within the City University of New York's (CUNY) four-year system in 1999 generated a great deal of attention. Students are granted provisional admission to a CUNY four-year institution based on high school grades and other non-test measures, but are

required to demonstrate "skills proficiency" with scores on either the SAT or the state-administered Regents exam.. Students who are unable to pass this hurdle are not accepted until they complete remedial coursework at a community college and ultimately pass the CUNY/ACT Basic Skills Tests (Parker & Richardson, 2005).

More recently, states such as Arizona, Georgia, Florida, Montana, South Carolina, and Virginia have all prohibited their in-state public universities from offering remedial education. In Virginia, the community colleges are responsible for all remedial education. Beginning in fall 2012, the public four-year institutions in the University of Tennessee system will no longer offer remedial courses and are expected to make arrangements with community colleges to handle the remediation of students accepted for admission. Since 2001, North Carolina has restricted schools within the University of North Carolina (UNC) system from offering remedial education (North Carolina House Bill 1211). Instead, institutions must refer students to other schools to complete their remedial coursework (University of North Carolina, 1992). When California moved toward concentrating remediation in the community college system in the late 1990s, several UC campuses contracted or folded their remedial classes into regular courses (Breneman, Costrell, & Haarlow, 1998).

The California State University (CSU) system has made several efforts to reduce the need for remedial education. These efforts include offering more summer remedial education programs, trying to strengthen teacher preparation, and attempting to set clearer standards and better communicate these standards to students, parents, and schools to ensure that high school graduates meet university admission requirements. The goal is to require recent high-school graduates to demonstrate college-level skills in English and mathematics as a condition of admission (Moore, Shulock, Ceja, & Lang, 2007). Additionally, California encourages students to complete their remediation at two-year colleges before entering the four-year system. Other states continue to debate the possible benefits of limiting remediation at public institutions to the two-year colleges.

Recently, Connecticut took an even bolder move by choosing to eliminate remedial and developmental courses altogether. In May 2012, both houses of the Connecticut legislature passed a bill

requiring the state's public institutions to eliminate non-credit remedial classes by fall 2014 (Connecticut General Assembly, 2012). Under the policy, students in need of remedial or developmental courses are to be placed into college-level courses and receive "embedded remedial support" in the form of access to additional office hours and academic support centers. They would also be required to attend an "intensive college readiness" program to learn basic study skills and strategies before the semester begins. This policy decision has initiated an important debate surrounding the sweeping nature of the policy. Currently 70 percent of students in Connecticut's 12 community colleges take at least one remedial class during their first year of enrollment, and critics are concerned these students will fail to make academic progress and may ultimately drop out without the aid of any remedial and developmental courses.

The movement away from four-year institutions offering remediation raises important questions about the effects restricting remedial services to community colleges will have on student outcomes. By shifting the locus of remediation, states could change enrollment patterns, and eventual degree completion could fall as a result: research suggests community college students do not perform as well as their peers who initially enter four-year institutions, perhaps due to a lack of institutional resources and support (Long & Kurlaender, 2009).

Should states limit or shift the costs of remediation?

Just as states may debate where remedial courses should be offered, there is also a question of how states should control the costs of these efforts. Some states limit the percentage of students who need remedial courses that can be accepted by an institution. Other states and institutions impose limits on the amount of time students have to complete the remediation or the number of times a student can repeat a remedial course. While the effects of these limitations are not yet known, they may have important implications for students' access to and progress through college.

Massachusetts is an example of a state that has chosen to limit the number of students who have remedial needs who can be admitted to a public university. In a 1998 report, the Massachusetts Board of Higher Education imposed a five percent cap on the enrollment of freshmen in remedial courses. The

Board of Higher Education raised the cap to ten percent in recent years; students above that percentage are referred to community colleges to complete their remedial coursework. A recent bill in Maine requires the public higher education system leaders to provide recommendations to the legislature as to how they will reduce the number of students requiring remedial education (State of Maine, 2012).

Some institutions and states impose time limits for remedial education courses. Texas limits both the amount of development credits that students can take and how many levels of remediation an institution can offer. The Texas Success Initiative states that legislative appropriations may not be used for developmental coursework taken by a student in excess of "(1) 18 semester credit hours, for a general academic teaching institution; and (2) 27 semester credit hours, for a public junior college, public technical institute, or public state college" (Texas Higher Education Coordinating Board, 2008, p. 1).

Other states limit the number of remedial courses that may be taken. At California community colleges, there is a limit of 30 semester or 45 quarter credits of "pre-collegiate basic skills" courses, except for ESL students or those with "verified learning disabilities." (James, Morrow & Perry, 2002). In Georgia, students who do not meet the minimum standards for college-level work within the University of Georgia system are placed into Learning Support classes. However, students may only take a maximum of one Learning Support classes and have only two attempts to pass the course. Students may only take two learning support classes in math and must pass these courses in three attempts, with no appeals (Georgia Board of Regents, 2010).

Efforts to limit remediation, either in where it is offered or how much is allowed, may have the effect of pressuring high school students to prepare better for college while pushing programs and college students to be more effective with their time. However, limiting remediation could have potentially harmful effects on student success. Students in need of remediation may become overwhelmed as they try to navigate how to fulfill both their remedial and college-level requirements under a more restrictive timeline or across multiple institutions. Therefore, while policymakers lament the need for remediation and how to diminish it, many of the efforts described above do little to reduce remediation rates or

improve programs. Instead of moving forward the conversation on how to "fix" remediation through research and practice, the policies being debated are focused almost entirely on how to manage it.

V. CONCLUSIONS AND IMPLICATIONS FOR POLICYMAKERS AND INSTITUTIONAL LEADERS

The big question policymakers and institutions wrestle with today concerns whether remediation is worth the costs. Given that much of the recent evidence suggests that remedial education and other support programs are having only small effects, positive or negative, on student outcomes, are remediation efforts worth it? However, as discussed earlier in this chapter, these limited benefits may be explained by differences in student background or prior levels of academic preparation, suggesting that targeting remediation efforts to the students most in need may improve student learning and long-term outcomes. In essence, remedial and developmental courses appear to help or hinder students differently by state, institution, background, and level of academic preparedness. Therefore, states and schools need not treat remediation as a singular policy but instead should consider it as an intervention that might vary in its impact according to student needs. Understanding differences in student needs could spur some insight into how to make *all* developmental and remedial courses more effective.

On the other hand, the negative effects found for students at the margin of needing remediation may suggest that remediation is not needed for as many students as currently placed. If the method used to assign students to remedial courses is flawed or unreliable, then students near the cutoff for assignment to these courses may be able to succeed in college-level courses without remediation if given the opportunity (Hughes & Scott-Clayton, 2011). A more accurate placement system could lead to a reduction in the number of difficulties students face in the classroom as a result of improper placement. Prince (2005) summarizes arguments for more standardized and consistent testing instruments and cutoff scores. He asserts that policies that are "more consistent and predictable" would help to "establish a common definition of academic proficiency… which could accelerate the alignment of secondary and

postsecondary academic requirements and expectations and enable colleges to send clear signals to high schools about the preparation students need to be college-ready" (p. 2). In addition, he argues that doing so would improve states' ability to track and evaluate their programs. Having a mandatory policy might also help facilitate transfer as students would be able to avoid duplication and arbitrary placement if moving to another institution in the state. However, even if standardization is preferred, it is not clear which assessment(s) should be used and where the threshold for remediation should be drawn.

Finally, campus administrators and policymakers should be aware that remediation efforts need not focus solely on the skills students did not learn in the past, but can instead attempt to identify and provide the skills students will need for a future career or academic major. Efforts to redesign the ways in which remediation is offered should be focused much more explicitly on the areas in which students most need improvement. By helping to redefine developmental education more as an academic support than a curricular burden, colleges and universities will be much more successful in helping their underprepared students to succeed. Future policy changes should continue this focus on differentiated delivery based on student skill and placement level as more institutions look to customize instruction to address specific student deficiencies.

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