

Addressing Flawed Research in Developmental Education

By Alexandros M. Goudas and Hunter R. Boylan

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ABSTRACT: *Much of recent research in postsecondary developmental education leaves the distinct impression that most remedial courses in community colleges are unsuccessful in helping students and that they should be entirely overhauled. Legislators and administrators are now taking these recommendations very seriously and are ready to cut programs that are ineffective out of their budgets. However, if this research is read in depth, it is clear the data do not completely support such claims of inefficacy. In fact, if one were to use solely the data from these studies, one could conclude that indeed community colleges are at least somewhat successful with their current developmental programs. The interpretation depends on how developmental education is defined, how success is defined, and how data is interpreted within a larger context. This paper explores the recent research's primary claims regarding the effectiveness of developmental education, the data supporting those claims, their conclusions, and some potentially harmful results. We include different interpretations of that same data along with other infrequently cited studies to help shed light on what the current state of developmental education is with our nation's nearly 1,200 community colleges.*

During the past 5 years, community college developmental education has been the subject of considerable debate. Research centers such as MDRC and the Community College Research Center (CCRC) have conducted many studies on all aspects of developmental education. Policy analysis organizations such as the Education Commission of the States, the National Governors Association, and Complete College America have published a number of reports on remedial courses. Foundations, such as the Lumina Foundation, the Bill and Melinda Gates Foundation, the Rockefeller Foundation, the Carnegie Foundation, and the Kresge Foundation, have also funded a variety of demonstration and research projects.

The result has been a plethora of literature and research marked by varying qualities of methodology and data analysis accompanied by sometimes conflicting and sometimes consistent conclusions. This literature has been used to produce countless policy recommendations for states and institutions. These policy recommendations are also of

varying quality. Some are based on reasonable interpretations of the available data, some represent a misunderstanding of the available data, and some simply ignore the available data. The purpose of this paper is to explore the continuum of recent developmental education studies, their data, the conclusions their researchers have made based on that data, the premises upon which those conclusions are based, and the unfortunate end to which some people are taking their arguments. Included are alternative interpretations and recommendations based on the data from this recent research, as well as some rigorous research often left out of the discussion.

A Misunderstanding of Developmental Education's Purpose

One of the most prevalent themes in recent research into developmental education is that remedial programs are not effective because students who take this coursework do not perform better than nonremedial students in subsequent comparisons, over and above the comparison of gatekeeper course pass rates (the term "gatekeeper course" is frequently used in this literature and it refers to college-level English or math, the typical first-year mainstream course a student takes at any college). What this means is that recent researchers believe if developmental courses are effective, then students who take these courses should do better than students who never need to take developmental courses, not only in subsequent gatekeeper courses but also in other areas such as persistence or retention (how long a student stays in a class or in college), total number of credits, overall GPA, transfer rates, graduation rates, and labor market outcomes (wages after graduation). Therefore, when remedial students do not ultimately perform better than nonremedial students in all or most of these categories, many researchers conclude that developmental courses do not actually help students in any observable way.

One of the most cited sources which makes this argument is Paco Martorell and Isaac McFarlin's "Help or Hindrance? The Effect of College Remediation on Academic and Labor Market

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Outcomes.” This self-published document was distributed in July of 2007 and revised in April 2010. Martorell, who works for the RAND Corporation, ran a regression discontinuity (RD) design study to analyze thousands of Texas high school students who took placement examinations to enter the state’s colleges and universities in the 1990s.

An RD design, in this instance, is a study which compares students who scored just below a placement test’s cut-off line (and thus required remediation) to students who scored just above the cut-off line (and thus did not require remediation). For example, if one student scored between 65-69 on ACT’s COMPASS® and was required to take a developmental course, and another scored between 70-74 and was allowed to enter a gatekeeper course, then an RD study would compare both of these students in subsequent assessments after the first one took any remedial courses necessary. The underlying assumption in this study is that since one student took a remedial course, then that student should perform better than a student who did not take that course because, as Martorell and McFarlin (2007) state, “the material covered in remediation helps students develop strong academic skills thereby improving college performance” (p. 4).

However, contrary to their expectations of what remediation was thought to accomplish, Martorell and McFarlin (2007) found that thousands of Texas students performed very similarly in comparisons regardless of whether or not any remedial courses were taken. For instance, when comparing nonremedial students to remedial students in community college transfer rates, their data show “no evidence that transferring up is more common among students who barely fail the TASP [placement] test” (p. 17). When comparing graduation rates, they found that “[t]here is no evidence that the graduation rate changes sharply at the passing cutoff and the estimated discontinuities are small and statistically insignificant. These results imply that remediation has little effect on eventual degree attainment” (p. 18). Finally, when comparing how much money nonremedial graduates made in relation to remedial graduates, they found “no significant positive effects of remediation on...labor market outcomes” (p. 21).

Since Martorell and McFarlin (2007) believe that developmental courses should have a positive effect on students’ long-term academic performance and labor market outcomes after they take remediation, what they conclude based on the results is that all developmental courses are ineffective. In the first line of their discussion section they state, “One potential reason we do not find evidence that assignment to remediation benefits students is that the remedial offerings in Texas are ineffective” (p. 23). Even though they raise other potential reasons why remediation did

not benefit students in that same discussion section, the last sentence of their abstract highlights their final findings: “We find little indication that remediation improves academic or labor market outcomes.” No other scholars have ever claimed that participation in remedial courses should affect labor market outcomes.

Another RD design study consistently cited to argue against remediation’s efficacy was completed by the National Center for Postsecondary Research (NCPR), an organization also headed by Thomas Bailey. It approached a different dataset in the same manner as Martorell and McFarlin’s 2007 study, and it came to similar conclusions. “The Impact of Postsecondary Remediation Using a Regression Discontinuity Approach: Addressing Endogenous Sorting and Noncompliance” (Calcagno & Long, 2008) used data from about 100,000 students who enrolled in Florida community colleges from 1997 to 2000, the study showed that students who were just beneath a placement test’s cut-off and who took developmental courses performed similarly

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to nondevelopmental students in later comparisons. Again, the authors’ expected that students who take “the treatment” (research terminology for “remedial education”) should do better than students who do not need the treatment.

Similar to how Martorell and McFarlin (2007) express their beliefs about the function of remediation, Calcagno and Long (2008) sum up this assumption at the beginning of the results section of their study:

It would be expected that after successfully learning the skills needed for college-level work, a remedial student would be more likely than an academically-equivalent nonremedial student to complete these courses. These courses, College Algebra (MAC 1105) and Freshman Composition Skills I (ENC 1101), are required for all standard associate degree programs. (p. 16)

Clearly they expect remedial students to do better in gatekeeper courses than nonremedial students, a prediction not grounded in any available research. Their data, however, show that both groups of students near the cut-off performed similarly in several areas of comparison: They found mostly statistically insignificant differences in gatekeeper pass-rates, two-year degree completion, total credits earned, fall-to-fall retention, transfer rates

to four-year institutions, and total college-level credits earned (pp. 32-33). Their abstract concludes “remediation might promote early persistence in college, but it does not necessarily help students on the margin of passing the placement cutoff make long-term progress toward earning a degree.”

Opposed to Martorell and McFarlin’s 2007 paper, Calcagno and Long’s 2008 study recognizes that the data only applies to students just beneath the cut-off: “Estimates [about remedial students just below the cut-off] should not be extrapolated to students with academic skills so weak that they scored significantly below the cutoff point” (p. 23). The problem is that even though this disclaimer regarding their data is expressed clearly, Calcagno and Long apply their limited finding about students at the cut-off to all remedial courses by stating that “the costs of remediation should be given careful consideration in light of the limited benefits” (p. 23).

A third RD study which addresses the effectiveness of developmental courses, “Does Remediation Work for All Students? How the Effects of Postsecondary Remedial and Developmental Courses Vary by Level of Academic Preparation” (Boatman & Long, 2010) is also a publication from the NCPR. It is important to note that this particular study is cited by subsequent research as concluding that developmental education is not effective, yet it does not make this claim. Once again this study uses the RD approach, but this time the data came from just over 3,000 full-time students who scored just below and just above placement tests to enter four-year universities and community colleges in Tennessee in the year 2000 (p. 9).

This research (Boatman & Long, 2010) found there were different effects at different levels of remedial courses: For university students assigned to lower-level math there were mixed or positive results; for students near the cut-off for all developmental education, there were negative effects; and for writing students at the bottom of the developmental placement, there were positive effects. Of all the studies addressed in our review, the analysis of these results is perhaps the most balanced:

Our analysis suggests that the effects of remediation are far more nuanced than previously thought....While developmental courses for students at the margin of needing any remediation have mostly negative effects, the impact of such courses for students with lower levels of preparation can be positive or have much smaller effects. In essence, remedial and developmental courses help or hinder students differently depending on their levels 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. (p. 21)

However, shortly after explicitly stating findings that indicate developmental education can be effective for certain students, they revert to the prevailing assumption of remedial ineffectiveness and conclude that a recently implemented approach for Tennessee's developmental programs, modules, should work better because "given that our findings suggest that the old developmental courses did not have large positive effects on outcomes for students on the margins of remedial placement, except at the lowest level of writing, these more focused reform efforts may be a welcome solution" (p. 22).

In all three of these RD research papers, there are two important underlying premises which need to be understood. The first is the assumption that students who take remedial courses should not simply do as well as nonremedial students, but they should do better—and not only better in gatekeeper pass-rates but in any and all subsequent achievement measures selected by the authors of these papers. Since data clearly show that remedial students just under the placement's cut-off score do not in fact perform better in subsequent comparisons to students just over the placement's cut-off—they perform equally—then because of their initial assumption, these authors consider remediation to be ineffective. The second premise is an overgeneralization of this finding: Since remediation does not show an increase in comparison rates for students just below to those just above a placement's cut-off, then this perceived failure of remediation is expanded by these authors—and many more who cite them—to include all developmental courses at all levels. This is in spite of the fact that two of the three RD studies clearly state that their results only apply to students just beneath a placement test's cut-off score.

An Alternative Interpretation of the Data

There is an alternative explanation that could help shed light on this research. If a different definition of developmental education's purpose is applied, the conclusions drawn from the data change dramatically. First, it is not reasonable to expect that students who take one, two, or even three developmental courses should actually perform better than nonremedial students several years after remediation. Instead, the function of remedial math and English courses is to achieve one immediate goal: to get students who need remediation in math and English up to the same point as students who do not need remediation in those two subjects and those two subjects alone, prior to taking any respective gatekeeper course (Cross, 1971). Therefore, to take students who do not understand basic math and English concepts and to get them to pass their gatekeeper course at the same rates as students who never require

remediation should be considered a success for developmental education. The recent research in developmental education does not define remediation's purpose in this manner, and thus it concludes that remediation is ineffective.

If developmental education as a whole is measured by a different standard of success—that remedial students should perform equally to nonremedial students and only in gatekeeper courses—then according to all the recent data, community college remediation is functioning as intended overall. The results of the comparison studies are clear: Students just below the cut score who take developmental education perform similarly to students who do not require it. Remediation has only recently been given this entirely new standard of success generated by researchers, many of whom are economists and have little to no experience or investment in higher education.

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Even if one chooses not to measure success in this alternative way, there are many caveats in the three recent RD studies regarding remediation that should give pause to anyone who concludes it is ineffective. First, Boatman and Long (2010) clearly state that remediation had positive effects on persistence and degree attainment for students who score lower on the placement test for writing (p. 4); Martorell and McFarlin (2007) take pains to explain that their conclusions could be incorrect and that there are many other explanations for their results (pp. 23-26); and, Calcagno and Long (2008), in addition to admitting their research only applies to students just below the cut-off for students only in Florida, also state many caveats in their conclusions, including, "Researchers using quasi-experimental methods such as an RD design should be aware of multiple potential sources of bias that might invalidate the underlying assumptions of the statistical model (McCrary, 2008; Lee, 2008)" (p. 24). The number of cautionary statements supplied by these researchers regarding their own work should lead any reasonable scholar to conclude that their assertions and recommendations are tentative at best, making the studies a volatile foundation upon which to base policy.

Casting additional doubt on the conclusions of these three studies, a 2008 study by Eric P. Bettinger and Bridget Terry Long of the National Bureau of Economic Research shows positive effects for remediation. Entitled "Addressing the Needs of Under-Prepared Students in Higher Education: Does College Remediation Work?", it is the only

study cited consistently in the recent literature highlighted in this paper that concludes remediation has positive effects overall. The abstract explicitly outlines this success:

The results suggest that students in remediation are more likely to persist in college in comparison to students with similar test scores and backgrounds who were not required to take the courses. They are also less likely to transfer to a lower-level college and more likely to complete a bachelor's degree. (Abstract)

Even though this study of approximately 28,000 Ohio college students clearly shows that developmental education positively affects student persistence and degree completion, this study is cited by subsequent researchers, including Martorell and McFarlin (2010) and Boatman and Long (2010), to argue that remedial instruction is ineffective overall. They accomplish this by combining Bettinger and Long's results with the three RD studies mentioned previously (and others, at times), and drawing the conclusion that since only one study out of four or more has positive results, then developmental education overall is ineffective.

As a characteristic example, consider a quote from Judith Scott-Clayton in a CCRC paper entitled "Do High-Stakes Placement Exams Predict College Success?" (2012):

Of several studies using quasi-experimental designs to estimate the impact of remediation, only one indicates positive effects while three others have found mixed or even negative results (Bettinger & Long, 2009; Calcagno & Long, 2008; Martorell & McFarlin, 2011 [sic]; Boatman & Long, 2010). This raises questions not only about the effectiveness of remedial instruction, but also about the entire process by which students are assigned to remediation. (p. 1)

Moreover, Scott-Clayton repeats this low-ratio claim in her New York Times Economix blog on April 20th, 2012: "Across several rigorous, quasi-experimental studies of the causal impact of remediation, only one found positive effects on college outcomes, while others found null to negative effects" (para. 10). She prefaces this statement with the same conclusions other recent researchers have drawn from the developmental education data: "The benefits of remediation are far from obvious" (para. 9).

Given the conflicting evidence in these four studies, the best conclusion a research scholar could make about programs that have significant impact on millions of students is that this research shows mixed results only. Instead of the three-negative-to-one-positive-equals-all-negative equation, it might be better for researchers to suggest that the results for remedial instruction are inconclusive at best. However, these recent researchers have concluded otherwise, have transcended the tradition

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of scientific caution in the interpretation of results, and have drawn unilateral conclusions from data that could very well be interpreted differently.

When these studies have been read in depth and understood clearly, it is not logical to conclude that remedial education is ineffective, or even, to put it as Katherine Hughes and Scott-Clayton do in a 2011 CCRC study, that “remediation is not clearly improving outcomes. This calls into question ... the effectiveness of remedial instruction” (p. 2). Indeed, the RD design only reveals one obvious fact: statistically equivalent students tend to perform similarly when assessed in the future. The focus of RD research does not include students who score lower on the placement tests, yet the researchers’ conclusions are applied to all of remediation’s effectiveness. Any doubts the authors of these four studies pose about their own data and any mention or emphasis on positive data are absent in their own titles and abstracts (the words that often make the most difference to readers) and, consequently, in most citations in later research.

Developmental Education as a Barrier

The other main line of reasoning recent developmental education research uses to argue that remediation as a whole is ineffective is the fact that many developmental students do not make it through their remedial sequences to even enroll in gatekeeper courses, much less graduate. Recent studies conclude that because of this, remediation acts as a barrier for students. To argue their view, researchers consistently cite a CCRC study entitled, “Referral, Enrollment, and Completion in Developmental Education Sequences in Community Colleges” (Bailey, Jeong & Cho, 2009). The study is based on one of the largest datasets in education today—it uses over a quarter of a million students from the Achieving the Dream (ATD) initiative, and it checks this data against the National Education Longitudinal Study of 1988 to confirm its results.

Bailey, Jeong, and Cho’s (2009) background section on developmental education begins with the usual premise that remediation in community colleges is ineffective, and they argue this by citing the Bettinger and Long (a 2005 version very similar to 2008’s), Calcagno and Long (2008), and Martorell and McFarlin (2007) RD studies. Bailey et al. state that

some descriptive studies have compared different approaches to remediation (Boylan, 2002). But only a handful of studies have compared the success of students who enroll in developmental courses to the success of similar students who enroll directly in college courses. (p. 4)

They go on to summarize each of the three studies and conclude with this question: “What accounts for these discouraging results?” (p. 5). Again, a deep and contextualized reading of these studies would not lead a reasonable person, and certainly not a research scholar, to state that the results are “discouraging.” The answer to their question is provided immediately after: “Certainly one fundamental problem is that most students referred to remediation, even those referred to only one level below college-level, do not complete their sequences” (p. 5). Bailey et al. (2009) go on to state that “fewer than one half of students complete their sequences, and only 20 percent of those referred to math and 40 percent of those referred to reading complete a gatekeeper course within three years of initial enrollment” (p. 26).

Even though Bailey et al. (2009) essentially conclude developmental education is ineffective and use three of the four studies previously addressed to argue this, they, like the others, have

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many caveats in their working paper that suggest otherwise. Their conclusion states that “there is economic value in college education even if it does not end in a degree,” and “very early exit may not necessarily indicate a problem” (p. 26). Furthermore, they state “so far, developmental education has at best shown limited success” (p. 28).

Disregarding all of these caveats in Bailey, Jeong, and Cho’s 2009 working paper, later publications often seem to misinterpret the data. Scott-Clayton in her 2012 working paper on placement tests cites Bailey et al. (2009) but disregards any of their positive statements; she instead argues that “the remedial ‘treatment’ that is assigned on the basis of these assessments is not obviously improving outcomes” (p. 1). Jenkins and Cho, in a 2011 CCRC working paper, cites Bailey, Jeong, and Cho’s 2010 summary (a brief based on their 2009 working paper) and makes a more emphatic statement:

Research indicates that community college developmental education is of questionable effectiveness in achieving even the narrower goal of preparing students to pass college-level courses in math and English (Bailey, Jeong, & Cho, 2010). As a result, developmental education becomes a dead end for many students. (p. 1)

Aside from the fact that it is difficult to reasonably argue developmental education is ineffective based on Bailey, Jeong, and Cho’s (2009) stated conclusions, the main point from their data is the undeniable fact that many students who start developmental courses do not complete the sequence and do not enroll in and complete a gatekeeper course.

In fact, approximately 80 to 90% of students who begin in remedial courses never attain a certificate or degree (Roksa, Jenkins, Jaggars, Zeidenberg, & Cho, 2009, p. 19). Even if these numbers are slightly high, the reality that so many students in remediation do not complete their courses is something that needs to be addressed. Again, the interpretation made by these researchers to explain this problem is that developmental education is an obstruction, an “obstacle course [that] creates barriers to student progress that outweigh the benefits of the additional learning that might accrue to those who enroll in remediation” (Bailey et al., 2009, p. 13).

Indeed, the institution of college itself serves as a barrier if Bailey, Jeong, and Cho’s (2009) standard were applied to it. However, once the challenges for each population are considered, an alternate interpretation of these numbers arises. First, students who have the academic and financial means to attend four-year institutions tend to graduate at a higher rate (Adelman, 2006; Higa, 2012; Taylor, Fry, Velasco, & Dockterman, 2010). Those students who have slightly lower academic and financial means may choose or be forced to choose two-year institutions, and most likely because of these challenges, their graduation rates are slightly lower (Aud et al., 2011; Higa, 2012; Taylor et al., 2010). Finally, it is well established (Attewell, Lavin, Domina, & Levey, 2006; Bailey et al., 2011; Bettinger & Long, 2008; Higa, 2012) that students in developmental education, especially those in two-year institutions, fall into a category that could be considered the most challenged of the three groups. As one example, Bailey’s 2009 study clearly correlates socioeconomic status with remedial placement: “As expected, neighborhood income and educational attainment were positively related to the odds of developmental progression” (p. 24). Thus, students in remediation face higher academic and socioeconomic challenges than the other two groups and it should not be surprising that their graduation rates are the lowest.

Though these rates should be unacceptable in our society, to put the blame squarely on the shoulders of developmental education for its students’ low completion rates, as most recent remedial research does, is an overgeneralization that does not account for other factors that contribute to high dropout rates. These factors, according to Attewell and Lavin (2007), include poverty, minority background, first-generation college student status, and poor high school preparation. Once the dropout rate of developmental students is viewed along with these factors and couched in the larger context of all higher education’s completion rates, it becomes more of a de facto progression and less of a reason why remedial studies are ineffective. In fact, evidence in some studies shows that remediation contributes to a higher percentage of students

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graduating (Attewell et al., 2006; Bettinger & Long, 2008), positioning developmental education as less of a barrier and more of a catapult.

Another CCRC study which shows the same type of data as Bailey, Jeong, and Cho (2009) is the article “Strategies for Promoting Gatekeeper Course Success Among Students Needing Remediation: Research Report for the Virginia Community College System” by Roksa, Jenkins, Smith Jaggars, Zeidenberg, and Cho (2009). This study analyzed 24,000 students in Virginia community colleges in 2004 and concluded that about half of all community college students who tested into developmental courses actually took those courses; about two-thirds who enrolled passed remedial English and half passed remedial math; of all students who started in remediation, half completed the English gatekeeper course and a quarter completed the math gatekeeper; of remedial completers who then enrolled in gatekeeper courses, about three-quarters passed; and finally, students who did not need remediation fared slightly better in most subsequent comparisons than students who did need remediation.

Again, the problem does not lie with the data; the numbers are very likely accurate. The difficulty lies with the interpretation and application of that data by the researchers themselves and, most importantly, by others who read and cite the data, especially those who are in the position to make decisions regarding students’ lives. For example, the Roksa et al. (2009) study was published at the behest of the Virginia Community College System in order to have data to overhaul their developmental sequences for what they call a “dramatic cultural shift” (Asera, 2011, p. 1). Officials recognized the need for data to support a change: “Data were vital to recognizing and addressing the problem of developmental education, and data will continue to be vital to tracking outcomes, assessing impact, and strengthening developmental education” (p. vi).

These officials, however, have applied the Roksa et al. (2009) data to create *co-enrolled* English developmental courses for the top tier of three remedial levels (p. 19), a shift in remediation that is only tenuously data-based. *Co-enrolled, co-requisite, linked, paired, supported, or embedded* college courses are all terms referring to various formats that have students who test into remediation take a college-level course concurrently with some form of developmental intervention. Students “co-enroll” in the developmental part of the course and thus receive the remediation immediately before or after the college-level class period, most likely with the same instructor (Jenkins, Speroni, Belfield, Jaggars, & Edgecombe, 2010).

Theoretically, for students who test into developmental courses, coenrollment allows for remediation to occur simultaneously with college-level

material all in one class. Pedagogically, however, this format might simply lead to students receiving more help from an instructor on the day-to-day assignments in a gatekeeper class. Coenrollment, then, is not quite developmental instruction in its traditional sense, that is, to help students beforehand so they may perform better in college-level gatekeeper courses. This is especially true for mathematics since performance in subsequent math courses requires mastery of prior courses’ material. What coenrollment may accomplish instead of ensuring prerequisite knowledge attainment is to help developmental students with one specific course’s assignments, much like tutoring does.

Although coenrollment represents a promising practice, it has not been supported by much rigorous data. One of a few studies on coenrollment comes from the CCRC (Jenkins et al., 2010), and it summarizes an accelerated learning program (ALP) at the Community College of Baltimore County which follows the exact format of coen-

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rollment described previously. Their study showed limited success in pass-rates and retention, especially when students were tracked for over 1 year. This limited success is mitigated by the fact that the ALP almost doubles the cost of remediation (p. 13) if one calculates the cost per student taught and not the cost per successful student. It is also important to know that the students in this study were drawn from a pool of students who scored just below the placement tests’ cut-offs for college-level courses.

A Misapplication of Data

A potentially dangerous misinterpretation and misapplication of data and conclusions from recent research can be seen in the 2012 publication by Complete College America (CCA) entitled, “Remediation: Higher Education’s Bridge to Nowhere.” CCA is a nonprofit organization founded in 2009, funded in part by the Gates Foundation, the Carnegie Corporation, the Ford Foundation, the Lumina Foundation, and the Kellogg Foundation. The CCA literature claims the organization’s mission is to increase college graduation rates.

The authors of the CCA (2012) publication argue that “remediation is a broken system” and that “there is a better way” (title page). Their solution is the very same one applied by Virginia’s community colleges: coenrollment. This time, however, it is referred to as “corequisite” courses,

and opposed to Virginia’s tiered approach, CCA recommends that all developmental courses occurring prior to college-level courses be cut completely from postsecondary institutions and be replaced with corequisites. Instead of remedial instruction before college-level courses, they suggest that “extra academic help becomes a corequisite, not a prerequisite” (p. 3). To support this proposal, CCA makes claims such as “the very structure of remediation is engineered for failure” (p. 2), and then goes on to provide data for these claims: “Amazingly, 30 percent of those who complete their remedial courses don’t even ATTEMPT their gateway courses within two years” (p. 2).

The data for this particular claim is cited from the CCRC’s Jenkins, Jaggars, and Roksa’s (2009) “Promoting Gatekeeper Course Success Among Students Needing Remediation: Findings and Recommendations from a Virginia Study (Summary Report).” Though CCA authors do not cite any additional research regarding the inefficacy of remediation or the efficacy of corequisites directly other than self-reported data from 33 states, they continue to repeat an assumption common to most recent remedial research: “Research shows that students who skip their remedial assignments do just as well in gateway courses as those who took remediation first” (p. 2). This statement is essentially a repetition of the conclusions drawn from the RD studies of Martorell and McFarlin (2007, 2010), Calcagno and Long (2008), and Boatman and Long (2010).

What CCA appears to be doing is taking the idea of corequisites for borderline remedial students to the extreme. Opposed to the Virginia and the Community College of Baltimore County models, which simply add corequisites as one tier, CCA proposes to do away with any and all remedial courses that occur before college-level courses and implement corequisites for every student who places into remediation. Unfortunately, this fundamental movement away from prerequisite remediation is based mostly on research conclusions which are taken out of context and misapplied. Essentially, CCA has taken a premise about remediation that is based on flawed research conclusions and has then proposed an alternative for all developmental courses that is not supported by any research.

This Same Recent Research Also Shows Developmental Education Works

One of the continual problems for recent researchers is that there are no apples-to-apples comparison data because students who take developmental courses may be fundamentally different from students who never needed remediation. Researchers suggest there may be other reasons why students who take remediation do better or worse than those

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who do not need remediation. Bailey and Alfonso (2005) note that “students who attend developmental education classes start out with weaker academic skills. As a result, it is hard to identify a causal relationship between remedial education and subsequent educational attainment” (p. 20). The closest researchers can get to a causal relationship, then, is to complete regression discontinuity design (RD) studies and thus compare students just below a placement cut-off to those just above. Although this comparison might be the closest researchers can get to a matched sample, it does not address the causal conundrum because the results cannot be applied to all remedial students.

A better study to conduct would be to compare two larger and more related remedial groups: The first group would be students who tested into developmental courses but who did not take them and instead took gatekeeper courses; the second group would be students who tested into developmental courses and then took those courses. Then both groups’ performance in their gatekeeper courses could be analyzed to see whether remediation had an effect.

The CCRC study by Bailey, Jeong, and Cho (2009) completed this exact design, yet these important results are not cited in any recent research nor highlighted in the initial report. Their revelatory information comes from the 2010 brief of their 2009 “Referral, Enrollment, and Completion in Developmental Education Sequences in Community Colleges,” and it is important to recall that this data comes from 250,000 students enrolled in ATD community colleges:

Among those students who never enrolled in remediation [but were recommended to], about 17 percent of students referred to math remediation and 45 percent of those referred to reading remediation enrolled directly in a gatekeeper course. These students passed their gatekeeper courses at a slightly lower rate than those students who enrolled in a gatekeeper course after they completed their developmental sequences. (Bailey et al., 2010, p. 4)

In fact, if Tables 2 and 3 are compared in this study, remedial students who did not take remedial math passed their gatekeeper courses at an average of only 12%, whereas remedial math students who took remediation passed their gatekeeper courses at an average rate of 50%; English remedial students who did not take remediation passed their gatekeeper courses at an average of 32%, whereas remedial students who took remediation passed their gatekeeper courses at an average of 55% (pp. 4-5). In addition to the studies showing that remedial students do no worse in areas such as GPA, degree completion, transfer rates, and other subsequent comparisons—a fact which can be viewed as a success for remediation—this additional data

could allow a reasonable person to conclude that remediation in its current format is indeed effective.

In addition to this, two recent peer-reviewed studies rarely cited by recent research in developmental education demonstrate the effectiveness of remediation. The first is a 2006 article in the *Journal of Higher Education* by Attewell, Lavin, Domina, and Levey entitled, “New Evidence on College Remediation.” These researchers looked at the same data set as did Bailey, Jeong, and Cho (2009)—the NELS:88 data—yet they controlled for students’ family background and high school performance when they calculated the efficacy of remediation. They found that “taking some remedial or developmental coursework has no negative effects on two-year college entrants’ likelihood of gaining a degree” (p. 906). Attewell et al. (2006) conclude that “there is evidence among two-year college entrants that students who passed remedial courses had better educational outcomes than did similar students who never took remedial courses” (p. 912).

“The results of this study demonstrate that postsecondary remediation is highly efficacious.”

The second is a 2010 study by Peter Bahr published in *The Review of Higher Education* entitled, “Revisiting the Efficacy of Postsecondary Remediation: The Moderating Effects of Depth/Breadth of Deficiency.” Bahr’s study uses a dataset of 168,000 students who attended 107 California community colleges from 1995 to 2001. His conclusion states “the results of this study demonstrate that postsecondary remediation is highly efficacious with respect to ameliorating both moderate and severe skill deficiencies...for those skill-deficient students who proceed successfully through the remedial sequence” (p. 199).

These studies appear in two of the most reputable journals in higher education, journals that are widely known and readily available. Yet researchers from the CCRC, the NCPR, and CCA have either chosen to cite tangential details from the studies (i.e., the percentage of two-year college entrants required to take remedial courses), or they have ignored or discounted them. For instance, one of the only substantial references of these studies is in Bailey’s 2009 article, “Rethinking Developmental Education in Community Colleges.” Referring to Attewell et al. (2006), Bailey states that “some research that controls for entering academic skills and other demographic characteristics has found that developmental students in community colleges do as well as students who never participate in

developmental education.” However, immediately after this, Bailey completely discounts Attewell et al.’s entire study by stating that “such studies do not, however, account for unmeasured differences that may exist between developmental and nondevelopmental students (more motivated students might, for example, find ways of avoiding remediation, thus skewing the results)” (p. 2). As usual, Bailey goes on to cite Bettinger and Long (2008), Calcagno and Long (2008), and Martorell and McFarlin (2007), suggesting that these three studies are more comprehensive and thus more reliable than the study by Attewell et al.

By now it should be clear that these three studies are not in fact comprehensive, nor are they necessarily more reliable. Additionally, if one were to read Attewell et al. (2006) in its entirety and compare it with the three studies Bailey cites, one would find that these three studies indeed do not “account for unmeasured differences,” as Bailey states, nor does the Attewell et al. study have skewed results. In fact, because Attewell et al. account for students’ high school preparation and socioeconomic background when analyzing the very same NELS:88 data that Bailey et al. (2009) analyzed, Attewell et al.’s results could be considered more methodologically valid.

The Cost Factor of Developmental Education

There is only one other fundamental argument recent research has used to dispute developmental education’s efficacy that needs to be addressed. Recent research frequently refers to the cost of remediation for community colleges as anywhere from one billion to three billion dollars a year (Bailey et al., 2009; Boatman & Long, 2010; Scott-Clayton, 2012b), and the implication is that this is too much money spent for the meager results achieved. This argument can be addressed with two comments. First, once the cost of remediation is framed in a larger context, it does not appear exorbitant. The 2010 government spending on higher education was approximately 140 billion dollars (State Higher Education Executive Officers, 2010, p. 9); therefore, three billion dollars is roughly 2% of that year’s entire budget. Since up to 60% of entering students require remediation at two-year institutions (Bailey et al., 2009; Attewell et al., 2006), then 2% of the total budget appears not too high, as recent research suggests, but rather too low. Recently, Wellman and Vandal (2011) pointed out that the idea that remediation costs too much is indeed a myth. They state, “Remedial education is actually inexpensive for the colleges—because institutions don’t use regular faculty for the courses, and the technology required is cheap” (para. 12). Using data from the Ohio Board of Regents as an example, they report that remedial courses represent only 3.6% of

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the state's undergraduate instructional costs but serve 38% of the state's full-time entering students (para. 12).

Disproportionate funding ties directly to the second comment: Education is perhaps the most important tool in helping society grow and remain viable. There is no need to cite data to prove investing in education works. If cost is an issue, the cost to society and the nation should be considered if funding is withheld from education at this or any level in the future.

Conclusion

It is important to note that never in this paper do we claim that the current developmental education system in community colleges is completely effective. There is always room for improvement, and there are instances where we agree with the findings of the recent research. Much of their data is superb, and a few of their suggestions are laudable. We even agree with using corequisites as part of a multifaceted approach, much like Virginia has. However, to use these studies to support the conclusion that Complete College America has forwarded and to be complicit in these conclusions as researchers reflects a lack of understanding of the practical purpose of developmental education.

In fact, the suggestion to completely replace prerequisites with corequisites is a radical shift in the history of developmental courses in higher education and all educators should be extremely concerned about these potentially harmful changes. In fact, this movement has already begun. The State of Connecticut passed a bill in the Spring of 2012 that requires all state colleges to eliminate prerequisite developmental courses and replace them with "supplemental support" by Fall of 2014 (An Act Concerning College Readiness and Completion, 2012). Though we do not know what reports Connecticut legislators read, their decision is the logical result of hearing about and reading studies that consistently refer to developmental education as ineffective. Recent research has encouraged the beliefs that contributed to Connecticut's decision, and these beliefs are founded in researchers' repeated misinterpretation of data and the echo chamber they have created in several publications.

In the quest for student success, opportunity must not be confused with efficacy. And opportunity here should not be defined as allowing students to enroll in gatekeeper courses without adequate preparation. It is a practical issue and thus requires a pragmatic approach. Based on all the evidence cited here, meeting underprepared students where they are academically affords them the chance to begin their higher education on a firm and equal footing with those who do not need remediation, an option that should be provided before college-level courses begin and that should continue to be provided as long as necessary.

Today, too many administrators and legislators simply think of the bottom line—the number of graduates—and in doing so disregard quality and standards for all students. It is a dis-service, to students and the country, to move them through without assuring proper understanding. This difficulty is well articulated by the CCRC's Bailey, Jaggars, and Jenkins (2011), who recently wrote on the topic of increasing completion rates in community colleges:

It will not be an easy task, particularly for community colleges, which disproportionately serve low-income, first-generation, and academically underprepared students. These students struggle with a variety of challenges, including job and child care responsibilities, transportation difficulties, financial limitations, poor high school academic preparation, and a lack of information about how to successfully navigate college. (p. 1)

Reputable recent research into developmental education offers some suggestions to deal with this

In the quest for student success, opportunity must not be confused with efficacy.

complex issue, and, fortunately, removing remedial prerequisites entirely is not yet one of them. We hope this idea will not be a movement which gains traction beyond the State of Connecticut, for it is neither data supported nor reality based. We hope instead that the many balanced and research-based approaches to effective remediation that have been published in peer-reviewed journals in the past and future will be recognized and used to help developmental education remain an integral component in America's equitable public higher education.

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