DOES REMEDIATION WORK FOR ALL STUDENTS?

EXAMINING THE EFFECTS OF POSTSECONDARY REMEDIAL AND DEVELOPMENTAL COURSES BY LEVEL OF ACADEMIC PREPARATION

Angela Boatman
Harvard Graduate School of Education
CUNY Higher Education Policy Seminar Series

April 20, 2011

Basic Facts about Remediation

→ Lack of academic preparation is a significant barrier to college success

→ Nationally approx. 40% of 1st year students are placed into college remediation (55-60% at CCs)

→ Recent emphasis on increasing the number of adults with 2yr degrees → Effective remediation policies are central to this goal

→ In 2006, the cost of remediation was $2.8 billion—½ in the form of direct costs and ½ what the nation loses in terms of lost earning potential due to college drop outs (Alliance for Excellent Education)
The Remediation Placement Exam

→ The remediation placement exam taken once arriving on campus has become the key gatekeeper to a college-level education (often a surprise to students)

→ In elite colleges students are sorted before admission. In open-access colleges, less-advantaged students are sorted after they arrive (Hughes & Scott-Clayton, 2010).

→ NCHEMS Transitions Study (2008):
  → 14 states use a common set of placement tests
  → 12 states determine cutoff scores at the state level
  → Trend is toward more state standardization of assessment and placement

Debates about Remediation

- **Proponents**: Provides opportunities for underprepared students, many of whom did not have the chance to take courses in HS
- **Critics**: Provides disincentives for high school students

- 8 states, incl. FL and IL, restrict remediation to 2yrs; others limit funding or pass on the costs

→ Unfortunately, limited evidence on what is the best policy
Does Remediation Improve Student Outcomes?

**Estimating the Effects of Remediation:**
- Students who are placed in remediation have less preparation from those who are not, so one would expect them to be less likely to succeed even in the absence of remediation
- Must develop ways to separate the effects of lower preparation from the effects of being in remediation
  - Random Assignment Studies
  - Descriptive Statistics/Correlation Studies
    - No causal relationships
  - Qualitative Experiments
    - Issues of scale

Remediation: Does it Work?

**Bettinger and Long (2009):** Using variation in remediation policies across colleges, students placed into remediation (compared to similar students) were:
- Less likely to dropout (larger effects for English)
- More likely to complete a four-year degree

**Attewell, Lavin, Domina, and Levey (2006):** NELS:88
- Less probable that students in remedial courses would receive a Bachelor’s degree, but no less probable that they would receive an Associate’s degree or certificate
Remediation: Does it Work?

Calcagno and Long (2009): Florida CCs
→ Remediation might promote early persistence in college, but it does not necessarily help students on the margin of passing the cutoff to make long-term progress toward a degree

Martorell and McFarlin (2008): Texas
→ Remediation appears to have little effect on a wide range of educational and labor market outcomes. The estimates are small and statistically insignificant but suggest that students are neither harmed nor greatly benefited by remediation

Does Remediation Improve Student Outcomes?

Prior Research:
- Mixed results, often negative or zero
- Only focus on students on the margin of needing remediation—do not investigate effects of remediation on students who are extremely under-prepared (they don’t have an appropriate control group)

The Tennessee Case
- Multiple cutoffs and changes in placement policy over time → Investigate effects of different levels of remediation using multiple RDs
- Sample: Fulltime students under age 21 who began at a TN public college or university in fall 2000
Remediation in Tennessee

ACT/SAT score determines which placement exam (if any)

- Take COMPASS Algebra exam
- Take COMPASS Arithmetic exam

Go to College-level courses
- Take Developmental Algebra II
- Take Developmental Algebra I
- Take Remedial Arithmetic

### COMPASS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPASS Algebra II</td>
<td>Score 50-100</td>
<td>Score 28-49</td>
<td>Score 0-27</td>
<td>Score 0-29</td>
</tr>
<tr>
<td>COMPASS Arithmetic</td>
<td>Score 30-100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How does remediation influence the outcomes of students at different ability/preparation levels?

Multiple cutoffs → Investigate the effects of different types of remediation for students of different abilities

**Data: TN Public Higher Education System**

- Student level-data from THEC & TBR
- Tracks students over 6 years
- 24 institutions (13 two-yr, 11 four-yr)
- Sample: Students who began in fall 2000 and took a COMPASS math, reading, or writing exam
Outcomes

- Early
  - Total Credits Completed after 1 year
  - 1st to 2nd Semester Persistence

- Medium-term
  - Still Enrolled in Year 3
  - Total Credits Completed after 3 years
  - College Credits Completed after 3 years

- Completion after 6 years
  - Completed any Degree or Certificate
  - Completed a Bachelor’s Degree

RD #1: Developmental Algebra II vs. College-level

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Score 50-100</td>
<td>Score 28-49</td>
<td>Score 0-27</td>
<td>Score 30-100</td>
<td>Score 0-29</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Credits after 3 years</td>
<td>College Credits after 3 years</td>
<td>Completed any Degree or Certif.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FULL SAMPLE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assigned to the Lower-level</td>
<td>-1.4753</td>
<td>-6.4105**</td>
<td>-0.2333*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2.6086)</td>
<td>(2.6360)</td>
<td>(0.1297)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>490</td>
<td>490</td>
<td>490</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOUR-YEAR INSTITUTIONS ONLY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assigned to the Lower-level</td>
<td>-0.9504</td>
<td>-4.8965</td>
<td>-0.1176</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3.3765)</td>
<td>(3.4042)</td>
<td>(0.1687)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>263</td>
<td>263</td>
<td>263</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWO-YEAR INSTITUTIONS ONLY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assigned to the Lower-level</td>
<td>-2.1376</td>
<td>-8.3325**</td>
<td>-0.4397**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4.1381)</td>
<td>(4.1780)</td>
<td>(0.2080)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>227</td>
<td>227</td>
<td>227</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
RD #1: Effects of Recommendation to
DEVELOP. ALGEBRA II –vs– COLLEGE-LEVEL MATH

Cumulative College Credits After Three Years
Developmental Algebra II vs. College-level

DEVELOPMENTAL ALGEBRA II

COLLEGE-LEVEL MATH

Negative Effect on Cumulative College Credits

COMPASS Score Relative to Cutoff
Number of Credits
-6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6

RD #3: REMEDIAL ARITHMETIC –vs– DEVELOP ALGEBRA I

COMPASS Algebra II test

COMPASS Arithmetic test

College Credits after 3 years

<table>
<thead>
<tr>
<th></th>
<th>College Level</th>
<th>Devel. Alg II</th>
<th>Remed. Arith.</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPASS Algebra II test</td>
<td>Score 50-100</td>
<td>Score 28-49</td>
<td>Score 0-27</td>
</tr>
<tr>
<td>COMPASS Arithmetic test</td>
<td>Score 30-99</td>
<td>Score 0-29</td>
<td></td>
</tr>
</tbody>
</table>

College Credits After Three Years
Remedial Arithmetic vs. Developmental Algebra I

Remed. Arith. | Develop. Alg I

Negative Effect on College Credits

COMPASS Score Relative to Cutoff
Number of Credits
-6 -5 -4 -3 -2 -1 0 1 2 3 4 5

FULL SAMPLE
Assigned to the Lower-level
Observations 1279

FOUR-YEAR INSTITUTIONS
Assigned to the Lower-level
Observations 469

Assigned to the
Lower-level
Observations

-3.0366* (1.5681) 1279

-5.7550** (2.9051) 469
RD #2: DEVELOPMENTAL WRITING — vs — REMEDIAL WRITING

### COMPASS English test

<table>
<thead>
<tr>
<th>ACT English Score</th>
<th>College Composition</th>
<th>Developmental Writing</th>
<th>Remedial Writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score 68-100</td>
<td>Score 28-67</td>
<td>Score 0-27</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Still Enrolled in Year 3</th>
<th>Total Credits after 3 yrs</th>
<th>College Credits after 3 yrs</th>
<th>Completed Degree or Certif.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assigned to the Lower-level</td>
<td>0.2197+ (0.1378)</td>
<td>3.9792+ (2.7198)</td>
<td>-0.4107 (2.5282)</td>
<td>0.3057* (0.1623)</td>
</tr>
<tr>
<td>Observations</td>
<td>898</td>
<td>898</td>
<td>898</td>
<td>898</td>
</tr>
</tbody>
</table>

**Outcome:** GRADE IN FIRST COLLEGE-LEVEL COURSE

Not causal analysis, but interesting estimates...

<table>
<thead>
<tr>
<th>WRITING</th>
<th>College-Level vs. Develop. Writing (RD #1)</th>
<th>Develop. Writing vs. Remedial Writing (RD #2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assigned to the Lower-level</td>
<td>0.0342 (0.0998)</td>
<td>0.5389*** (0.1598)</td>
</tr>
<tr>
<td>Observations</td>
<td>782</td>
<td>522</td>
</tr>
</tbody>
</table>

**FOUR-YEAR INSTITUTIONS ONLY**

| Assigned to the Lower-level | 0.2791* (0.1464) | 0.1954 (0.1803) |
| Observations | 315 | 231 |

**TWO-YEAR INSTITUTIONS ONLY**

| Assigned to the Lower-level | -0.1438 (0.1356) | 0.8960*** (0.2765) |
| Observations | 467 | 291 |
Summary: The Effects of Remediation on Students at Different Levels

- The results suggest that remedial and developmental courses do differ in their impact by the level of student preparation

- Negative effects for those students on the margins of needing any remediation (similar to other research)

- However, at the other end of the academic spectrum, the negative effects of remediation were much smaller and occasionally positive, especially in Writing

→ Remedial and developmental courses help or hinder students differently depending on their level of academic preparedness

Implications and Additional Questions

- Why does remediation work for some students and not for others? → How can we improve remedial and developmental programs for all?
  - What is the best way to offer remediation?
  - Characteristics of strong remedial programs?

- TN course redesign

- Found differences by institutional level – Has implications for the effects of limitations on remedial course-taking (e.g., only at CCs)?

- Early Placement Testing – a preventative measure?
  - How to compare students placed into college-level courses by ACT score alone?
Recent Trends/Interventions

1. Avoid developmental education and move directly in college-level
   - Dual Enrollment Programs
   - Early Placement Assessment Programs
   - Summer Bridge Programs
2. Accelerate students’ progress through developmental education
   - Fast-Track Courses
   - Modularized Courses
   - Mainstreaming into College-Level Courses
3. Contextualized instructional models
   - Contextualized Learning in Vocational Programs
   - Learning Communities
4. Supplemental supports
   - Tutoring and Supplemental Instruction
   - Advising
   - Student Success Courses


Recommendations for Research

- More evidence about what type of reform would work best (as opposed to more evidence of the need for reform)
- Focus on subgroup analyses in remediation (ex-students from varying academic skill levels)
- What part of the results are driven by the instructional approach, and what part by the connections and social relationships among students?
- It appears any one developmental model is not sufficient to address the diverse needs and preferences all students
  - Semester-long learning communities alone may not be the answer
- More systematic experimentation and evaluation
Conclusion

- To address issues of college completion, we must find ways to address the needs and concerns of the bottom half of the distribution, most of whom are placed into remediation.

- States and schools need not treat remediation as a singular policy but instead consider it as an intervention that might vary in its impact according to student needs

Thank You
Angela Boatman
angela_boatman@mail.harvard.edu