An Overview of Quantitative Findings from an Experiment in Metacognition Faculty Training

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Outline

1. Summary of Key Takeaways
2. Describe the subjects of the study (students & faculty)
3. Separately for RCT1 and RCT2:
   1. Check for balance
   2. Evaluate attrition
   3. Report results
Key Takeaways

• Randomization largely seems to have worked as intended (treatment and control groups look similar)

• No evidence that RCT 1 impacted student use of metacognition, academic outcomes, or persistence

• No evidence that RCT 2 impacted student use of metacognition, academic outcomes, or persistence
Description of Subjects
### Who are Spelman Students (Pre-Characteristics)?

<table>
<thead>
<tr>
<th>Description</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation (MSLQ)</td>
<td>3.70</td>
<td>0.48</td>
<td>1,341.00</td>
</tr>
<tr>
<td>Regulation (MAI)</td>
<td>3.77</td>
<td>0.55</td>
<td>1,362.00</td>
</tr>
<tr>
<td>Knowledge (MAI)</td>
<td>3.91</td>
<td>0.52</td>
<td>1,362.00</td>
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<tr>
<td>HS GPA</td>
<td>3.67</td>
<td>0.35</td>
<td>1,396.00</td>
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<tr>
<td>SAT Score / 100</td>
<td>11.38</td>
<td>1.16</td>
<td>1,420.00</td>
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<tr>
<td>Pell Eligible</td>
<td>0.47</td>
<td>0.50</td>
<td>1,309.00</td>
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<tr>
<td>Parent with College Degree</td>
<td>0.79</td>
<td>0.41</td>
<td>1,354.00</td>
</tr>
<tr>
<td>Home Region: West</td>
<td>0.08</td>
<td>0.27</td>
<td>1,314.00</td>
</tr>
<tr>
<td>Home Region: Midwest</td>
<td>0.16</td>
<td>0.37</td>
<td>1,314.00</td>
</tr>
<tr>
<td>Home Region: Northeast</td>
<td>0.18</td>
<td>0.38</td>
<td>1,314.00</td>
</tr>
<tr>
<td>Home Region: South</td>
<td>0.55</td>
<td>0.50</td>
<td>1,314.00</td>
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<tr>
<td>Two Parent Household</td>
<td>0.59</td>
<td>0.49</td>
<td>1,360.00</td>
</tr>
<tr>
<td>Racially Diverse High School</td>
<td>0.32</td>
<td>0.46</td>
<td>1,352.00</td>
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<tr>
<td>Public High School</td>
<td>0.82</td>
<td>0.39</td>
<td>1,368.00</td>
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<tr>
<td>Age</td>
<td>17.88</td>
<td>0.46</td>
<td>1,442.00</td>
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<tr>
<td>STEM Major</td>
<td>0.46</td>
<td>0.50</td>
<td>1,347.00</td>
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<tr>
<td>Social Science Major</td>
<td>0.39</td>
<td>0.49</td>
<td>1,347.00</td>
</tr>
<tr>
<td>Languages Major</td>
<td>0.00</td>
<td>0.06</td>
<td>1,347.00</td>
</tr>
<tr>
<td>Humanities Major</td>
<td>0.08</td>
<td>0.28</td>
<td>1,347.00</td>
</tr>
<tr>
<td>Arts Major</td>
<td>0.03</td>
<td>0.17</td>
<td>1,347.00</td>
</tr>
</tbody>
</table>
Who are Spelman Faculty (Pre-Characteristics)?

<table>
<thead>
<tr>
<th>Description</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge (MAI)</td>
<td>3.49</td>
<td>0.88</td>
<td>33.00</td>
</tr>
<tr>
<td>Regulation (MAI)</td>
<td>3.71</td>
<td>0.78</td>
<td>33.00</td>
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<tr>
<td>PhD</td>
<td>0.72</td>
<td>0.46</td>
<td>33.00</td>
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<tr>
<td>Full-time Faculty</td>
<td>0.55</td>
<td>0.51</td>
<td>33.00</td>
</tr>
<tr>
<td>Tenured or Tenure-track</td>
<td>0.30</td>
<td>0.47</td>
<td>33.00</td>
</tr>
<tr>
<td>Taught ADW (# Times)</td>
<td>0.33</td>
<td>0.48</td>
<td>33.00</td>
</tr>
</tbody>
</table>
What Do **Outcomes** Look Like Overall?

<table>
<thead>
<tr>
<th>Description</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation (MSLQ)</td>
<td>3.54</td>
<td>0.49</td>
<td>1,225.00</td>
</tr>
<tr>
<td>Knowledge (MAI)</td>
<td>3.92</td>
<td>0.59</td>
<td>1,233.00</td>
</tr>
<tr>
<td>Regulation (MAI)</td>
<td>3.77</td>
<td>0.62</td>
<td>1,233.00</td>
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<tr>
<td>Spring ADW Grade</td>
<td>3.27</td>
<td>0.88</td>
<td>1,382.00</td>
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<tr>
<td>Spring GPA</td>
<td>3.12</td>
<td>0.76</td>
<td>1,395.00</td>
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<tr>
<td>Spring GPA (excl. ADW)</td>
<td>3.12</td>
<td>0.72</td>
<td>1,362.00</td>
</tr>
<tr>
<td>Persistence</td>
<td>0.89</td>
<td>0.31</td>
<td>1,446.00</td>
</tr>
</tbody>
</table>
Evaluation of RCT 1
RCT 1 – Are Students Balanced Across Treatment?

**Metacognition Measures**
- Regulation (MSLO)
- Regulation (MAI)
- Knowledge (MAI)

**Academic Measures**
- HS GPA
- SAT Score / 100

**Background Characteristics**
- Pell Eligible
- Parent with College Degree
- Home Region: West
- Home Region: Midwest
- Home Region: Northeast
- Home Region: South
- Two Parent Household
- Racially Diverse High School
- Public High School
- Age

**Student Interests**
- STEM Major
- Social Science Major
- Languages Major
- Humanities Major
- Arts Major

[Graph showing coefficient and confidence interval for various measures and characteristics.]

Coefficient and Confidence Interval

{-0.15 to 0.1}
RCT 1 – Are Faculty Balanced Across Treatment?

**Metacognition Measures**
- Knowledge (MAI)
- Regulation (MAI)

**Instructor Background**
- PhD
- Full-time Faculty
- Tenured or Tenure-track
- Taught ADW (# Times)
RCT 1 – How Much Attrition Occurred?
RCT 1 – What Were the Results?
Evaluation of RCT 2
RCT 2 – Are Students Balanced Across Condition?

**Metacognition Measures**
- Regulation (MSLQ)
- Regulation (MAI)
- Knowledge (MAI)

**Academic Measures**
- HS GPA
- SAT Score / 100

**Background Characteristics**
- Pell Eligible
- Parent with College Degree
- Home Region: West
- Home Region: Midwest
- Home Region: Northeast
- Home Region: South
- Two Parent Household
- Racially Diverse High School
- Public High School
- Age

**Student Interests**
- STEM Major
- Social Science Major
- Languages Major
- Humanities Major
- Arts Major

Coefficient and Confidence Interval
RCT 2 – Are Faculty Balanced Across Condition?

[Graph showing metacognition measures and instructor background across different conditions (CT, TC, TT).]
RCT 2 – How Much Attrition Occurred?
RCT 2 – What Were the Results?
Conclusion
What have we learned?

• Providing faculty training in metacognition does not appear to be superior to providing faculty more general training if the goal is to improve student metacognition, academic outcomes, or persistence.

• For RCT1:
  • We are able to rule out the idea that training faculty on metacognition raises students self-reported use of metacognition by more than 0.1 points on three measures.
  • We are able to rule out the idea that training faculty on metacognition raises student GPA by more than 0.03 points.
  • We are able to rule out the idea that training faculty on metacognition increases college-persistence by more than 6 percentage points.

• Measures from RCT2 are generally noisier and do not allow us to rule out as precise of effects.

• External Validity