

# Research Problem

**Problem: URM students make up the majority of the D/W/F**



AMERICAN SOCIETY FOR MICROBIOLOGY



# Research Question – correlates for success/failure?

- **Upperclass students do significantly better in Intro Bio**
  - **Low math placement scores strongly correlate with D/W/F**
- **For students with poor math placement scores, can a “Low stakes” Freshman Bio seminar and delayed entrance to major improve performance in Bio 1?**



# Research Methods

My primary research methods include:

MAI – Metacognitive assessment inventory  
Exam wrappers – quantitative and qualitative (open response)  
Grades  
*Intervention – Training on metacognition, study skills, note taking skills → Reflective journaling study techniques/time*

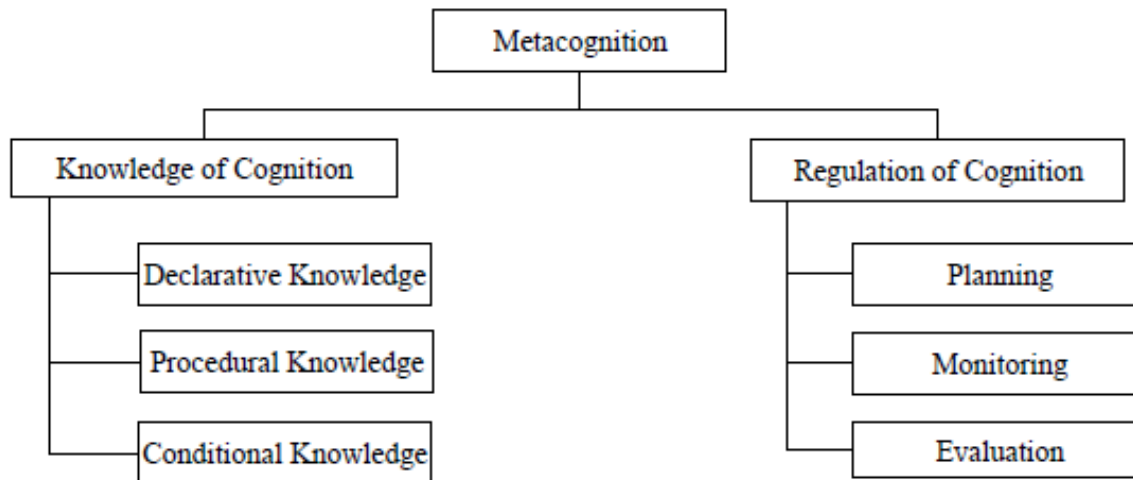


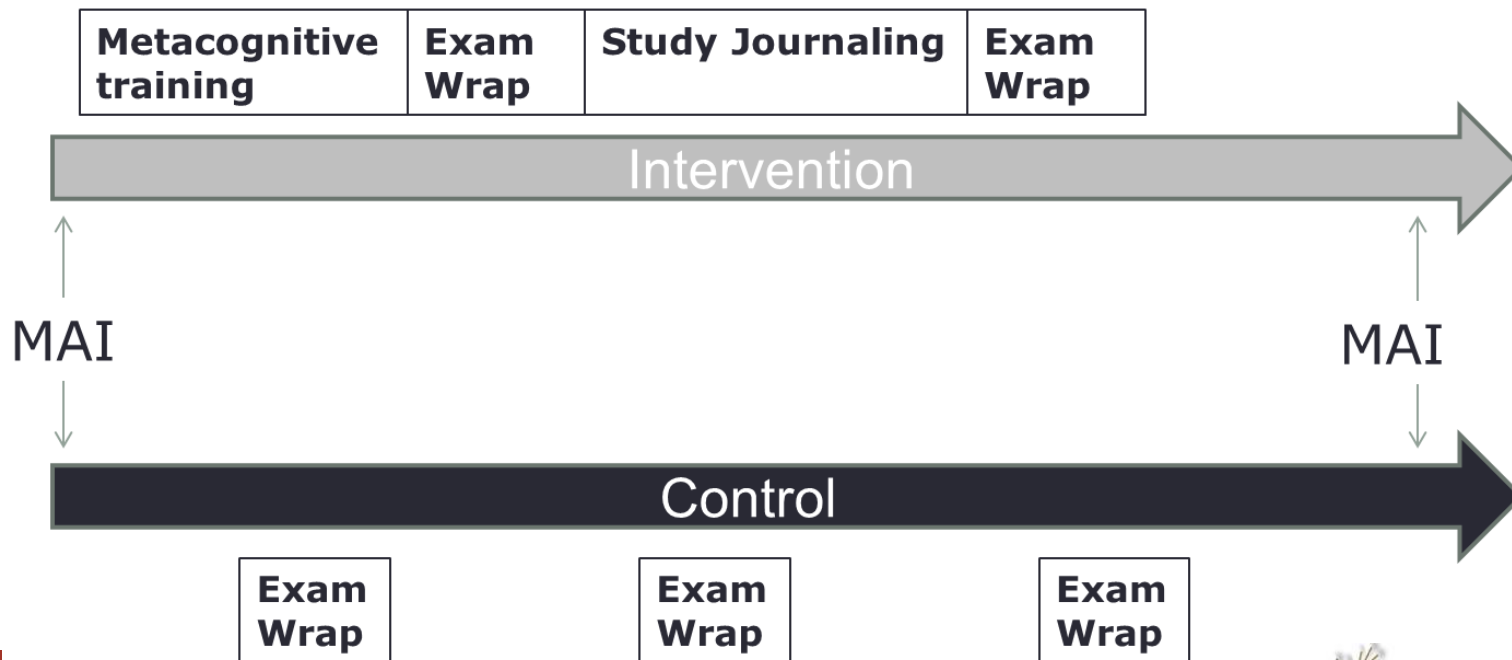
Figure 2. Subcomponents of Metacognition. Described in “Promoting Self-Regulation in Science Education: Metacognition as Part of a Broader Perspective on Learning,” by G. Schraw, K. W. Crippen, and K. Hartley, 2006, *Research in Science Education*, 36, p. 111-139.



# Research Methods

How will I collect these data?

MAI – inventory at multiple timeline intervals  
Exam wrappers Pre/Post each exam  
Grades at end of term  
-Intervention vs Control



# Alignment of Research Question and Methods

## Controlled

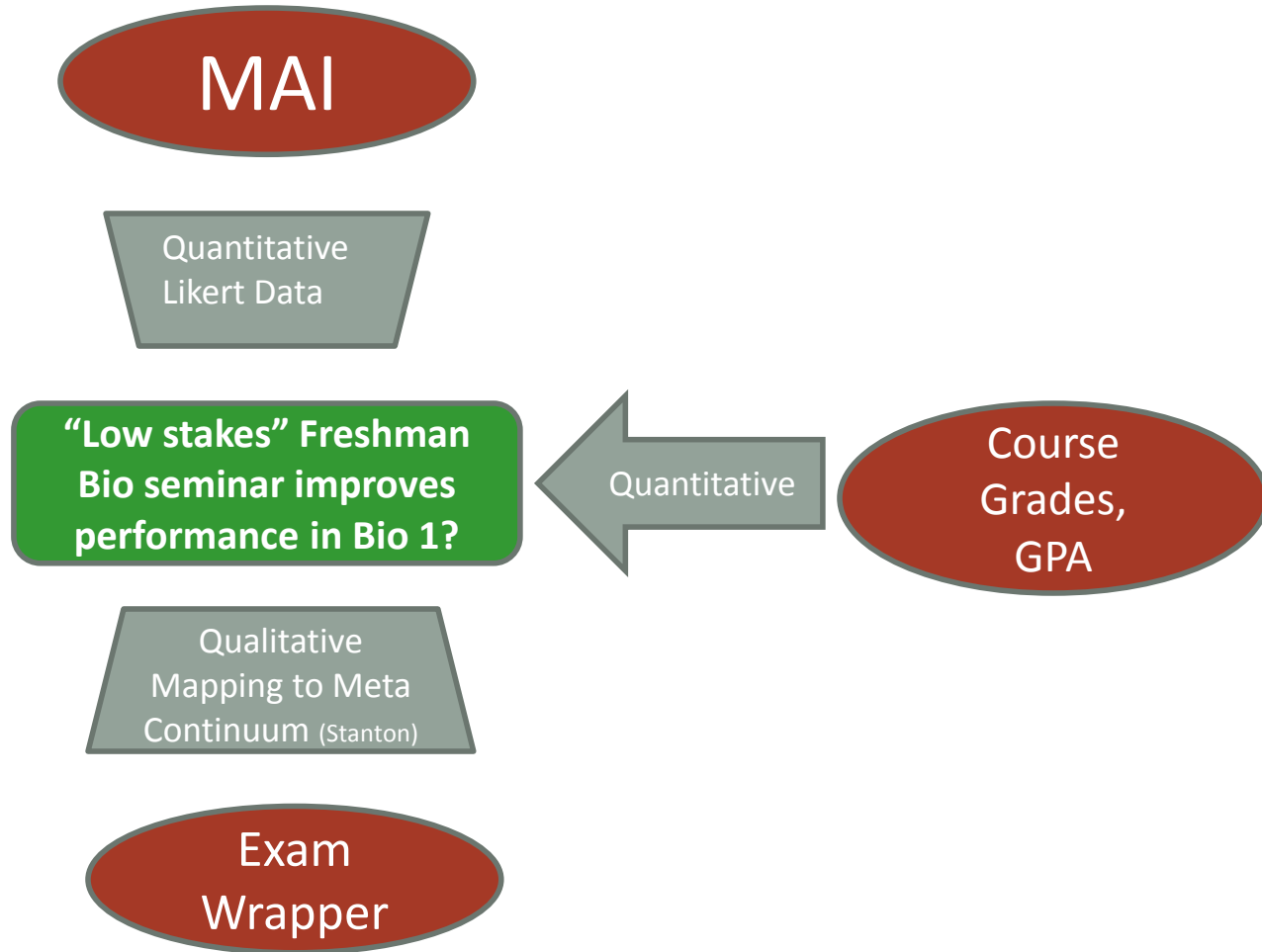
### Intervention:

- Metacognitive training
- Study skills
- Note taking skills
- Reflective journaling

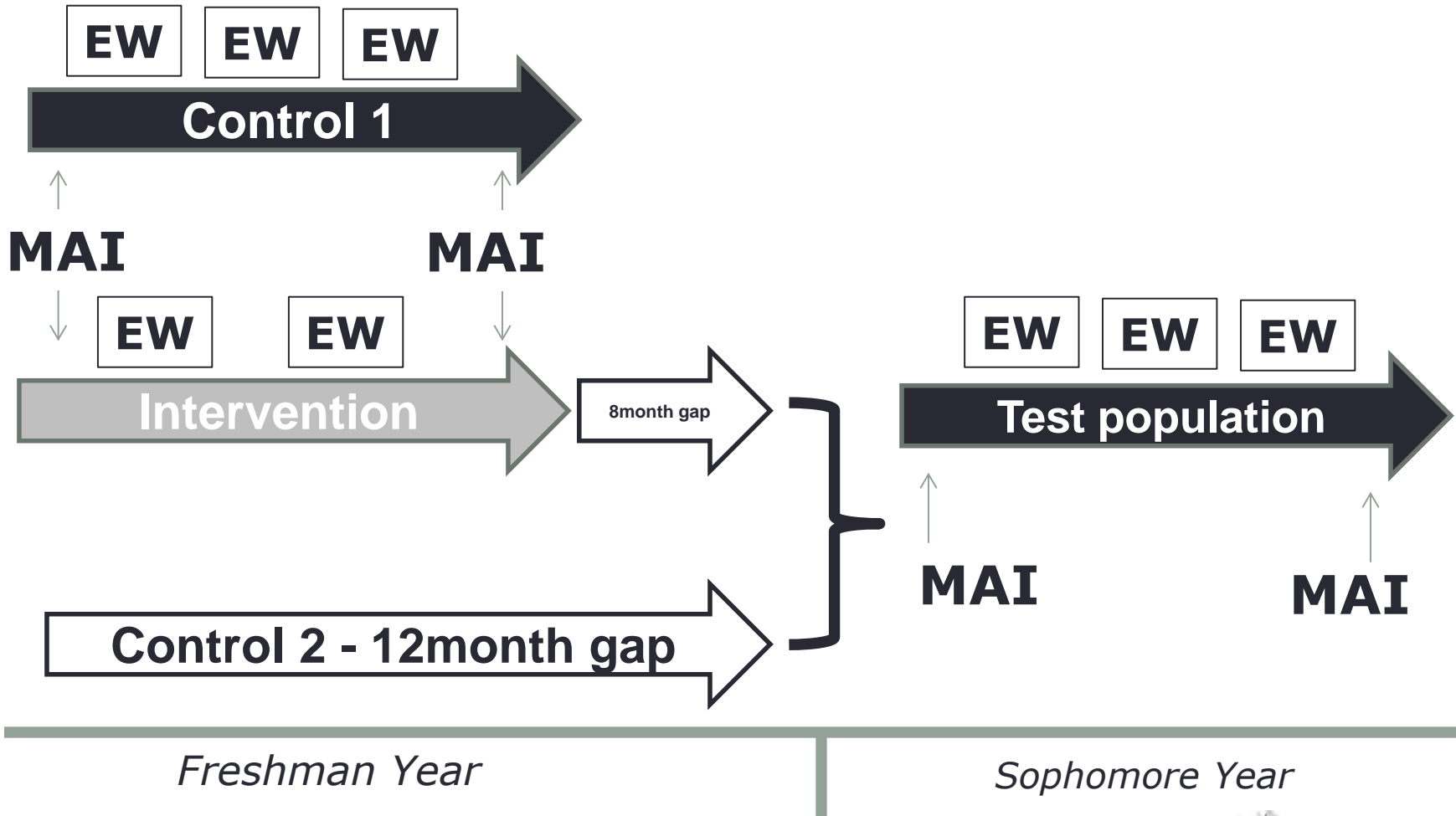
## Confounding

### factors:

- Time Gap
- Community development
- Self efficacy/confidence



# Research Methods



# Research Methods

<b>How will I collect these data?</b>	<b>MAI – inventory at multiple timeline intervals</b> <b>Exam wrappers Pre/Post each exam</b> <b>Grades at end of term</b> <b>-Intervention vs Control</b>
<b>My strategy to analyze these data will be:</b>	<ul style="list-style-type: none"><li>• Average MAI (Knowledge or Regulation) of Cognition – temporal gains?</li><li>• Changes in study behavior contextualized on the Stanton continuum of metacognitive regulation</li><li>• Statistical analysis vs Course Grade/GPA (consult with statistician for multivariate analysis)</li></ul>

