Barriers and Enablers of Success in Web-Based Training

Traci Sitzmann, Ph.D.
Advanced Distributed Learning
Co-Laboratory

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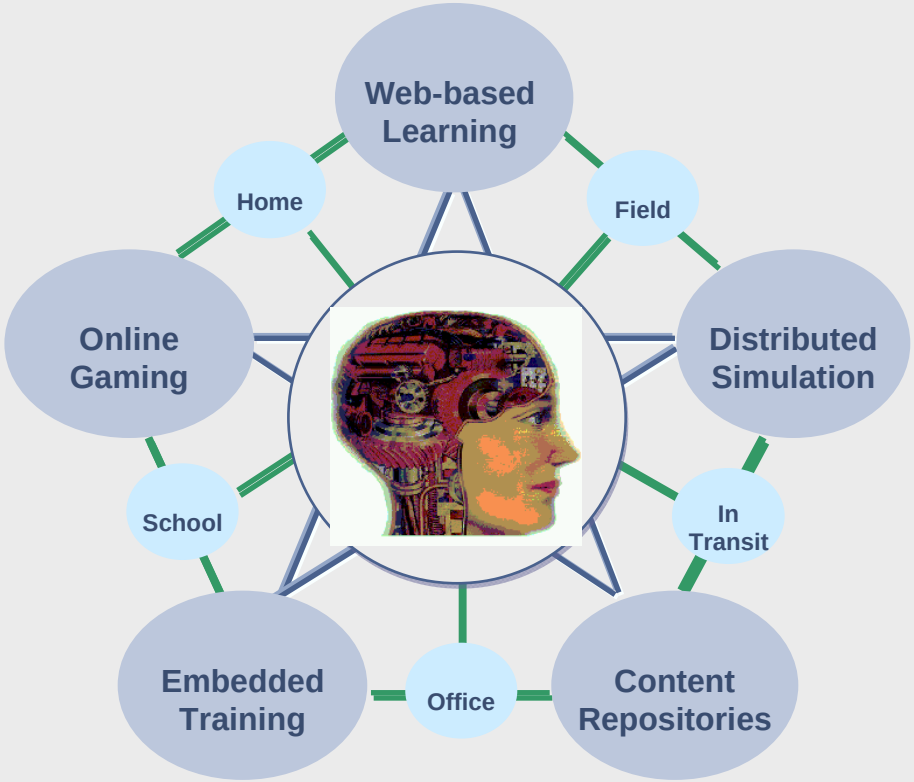
Realizing the ADL Vision

ARE WE: Providing access to the highest quality education and training, tailored to individual needs, delivered cost effectively, anywhere and anytime?



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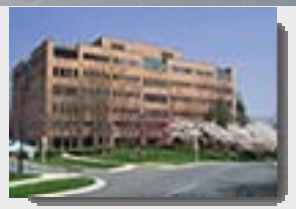
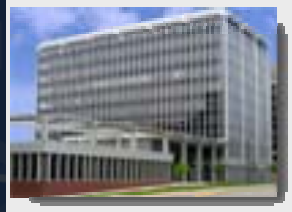
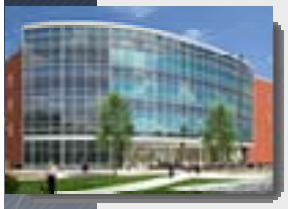
ADL Co-Lab Network



- ADL Co-Laboratory Hub
  Alexandria, Virginia

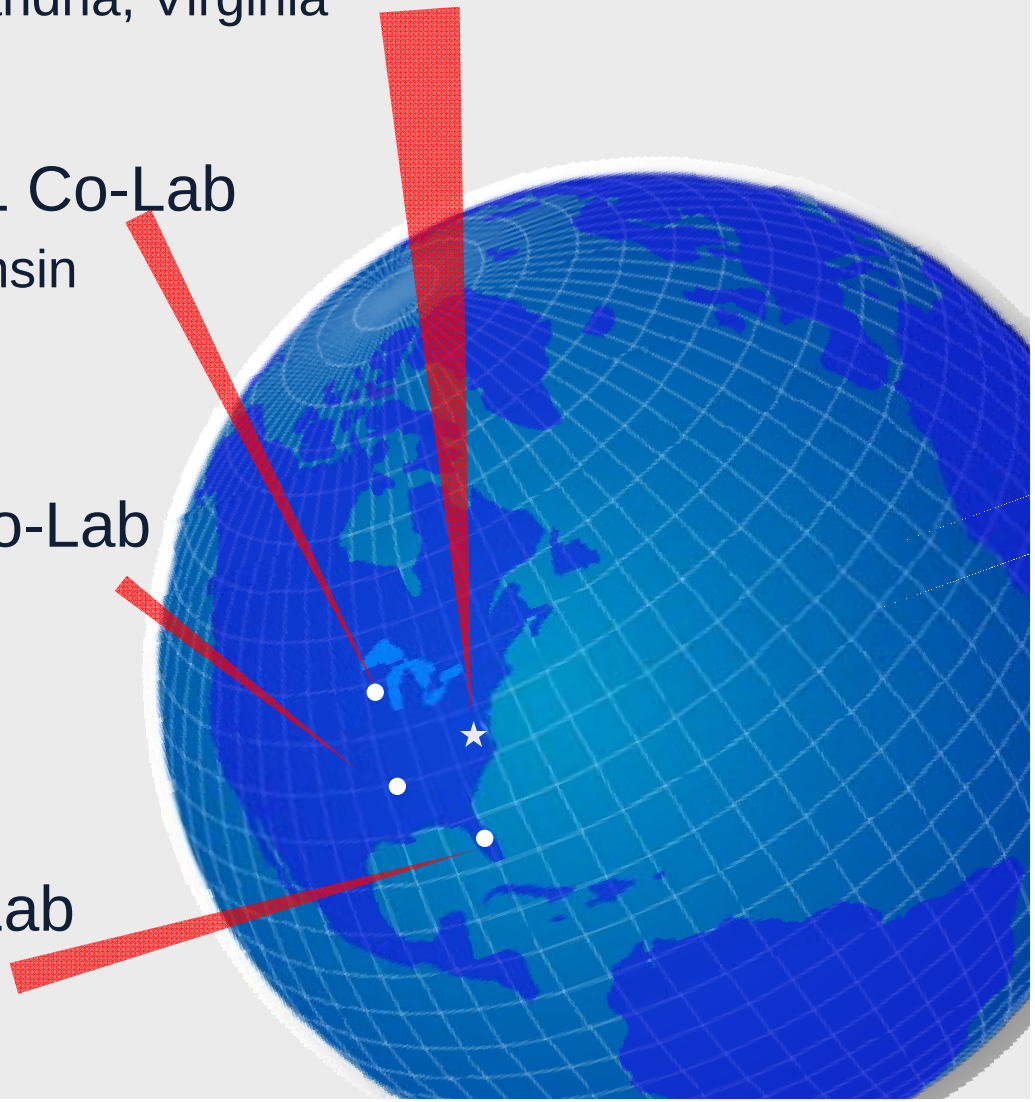


- Academic ADL Co-Lab
  Madison, Wisconsin



- Workforce ADL Co-Lab
  Memphis, Tennessee

- Joint ADL Co-Lab
  Orlando, Florida



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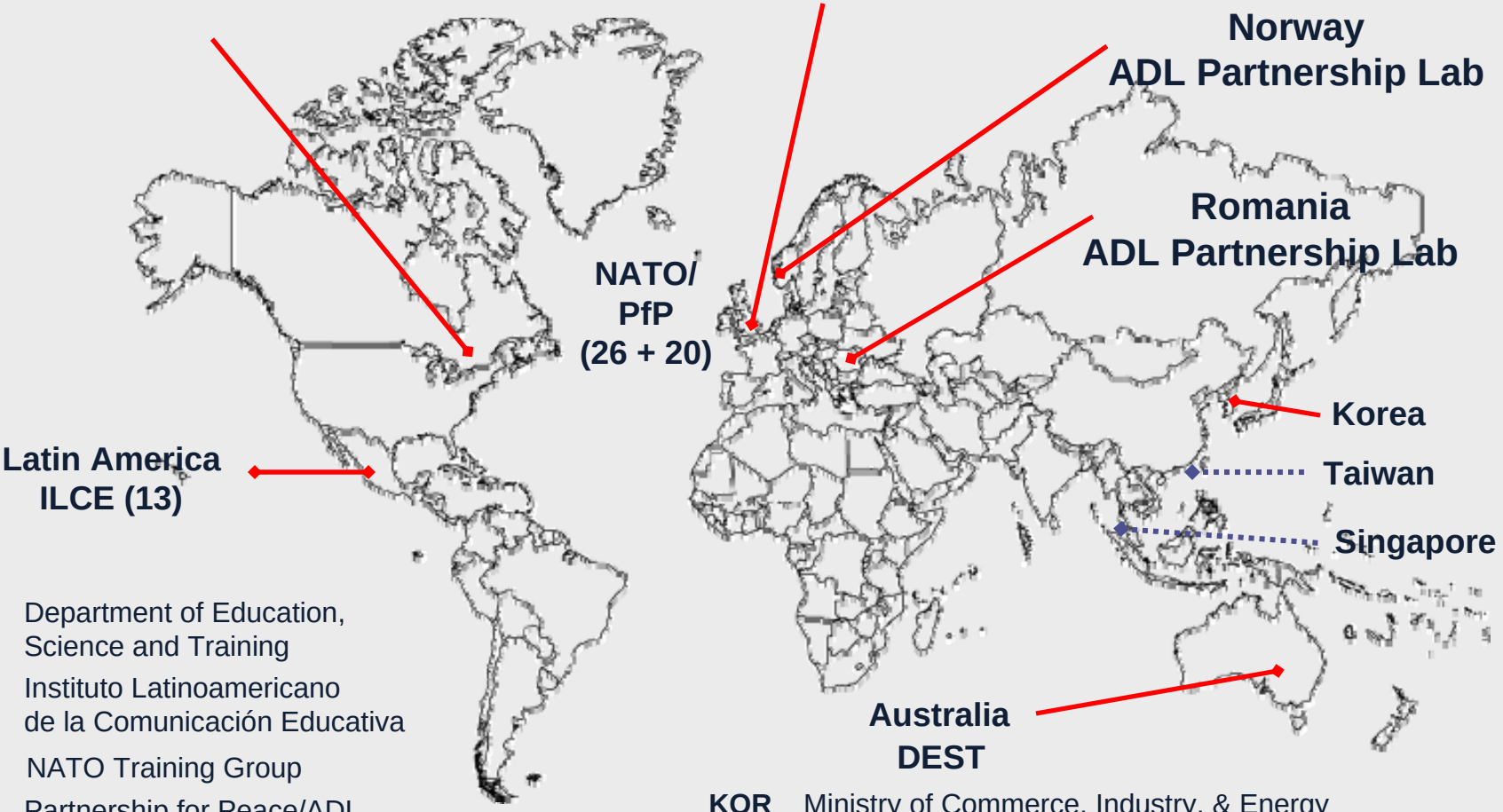
ADL Global Partnerships



DEST Department of Education, Science and Training

ILCE Instituto Latinoamericano de la Comunicación Educativa

NATO NATO Training Group

PfP Partnership for Peace/ADL Working Group

KOR Ministry of Commerce, Industry, & Energy

TWN Ministry of Economic Affairs

SGP Singapore Armed Forces

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Overview

- Prompting self-regulation to improve learning
- Technical interruptions in Web-based training

SOMETIMES WE JUST NEED REMINDERS

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Self-Regulation

- Self-regulation is a process that enables individuals to guide their goal-directed activities over time and across changing circumstances
- Iterative process with a gradual effect on learning over time

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Self-Regulation Prompts

Am I concentrating on learning the training material?

Do I need to continue to review before taking the final exam?

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Self-Regulation Prompts

Am I setting learning goals to ensure I have a thorough understanding of the training material?

Do I understand all of the key points of the training material?

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Self-Regulation Conditions

- Immediate self-regulation
  - Prompt self-regulation throughout the entire course
- Delayed self-regulation
  - Prompt self-regulation in the latter half of the course
- Control
  - Do not prompt self-regulation

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Multiple Studies

- Study 1
  - Online training course
  - Learning was assessed with multiple-choice and performance exams
  - 93 trainees; Average age = 44 years
- Study 2
  - TANDEM, a PC-based radar-tracking simulation
  - Assessed basic and strategic performance in the simulation
  - 171 undergraduates; Average age = 19 years

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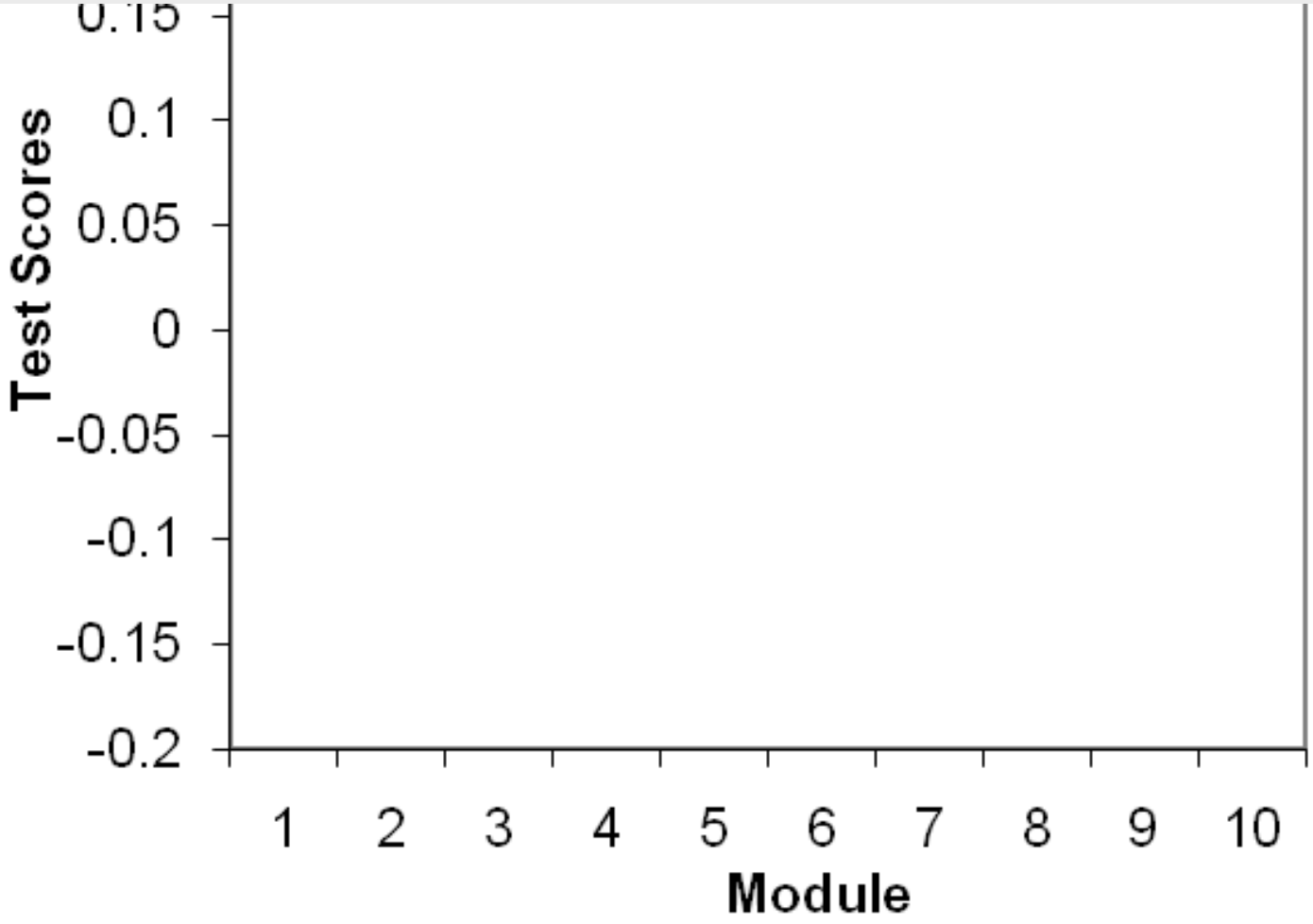
Method

- Examine changes in performance over time
- Standardized test scores



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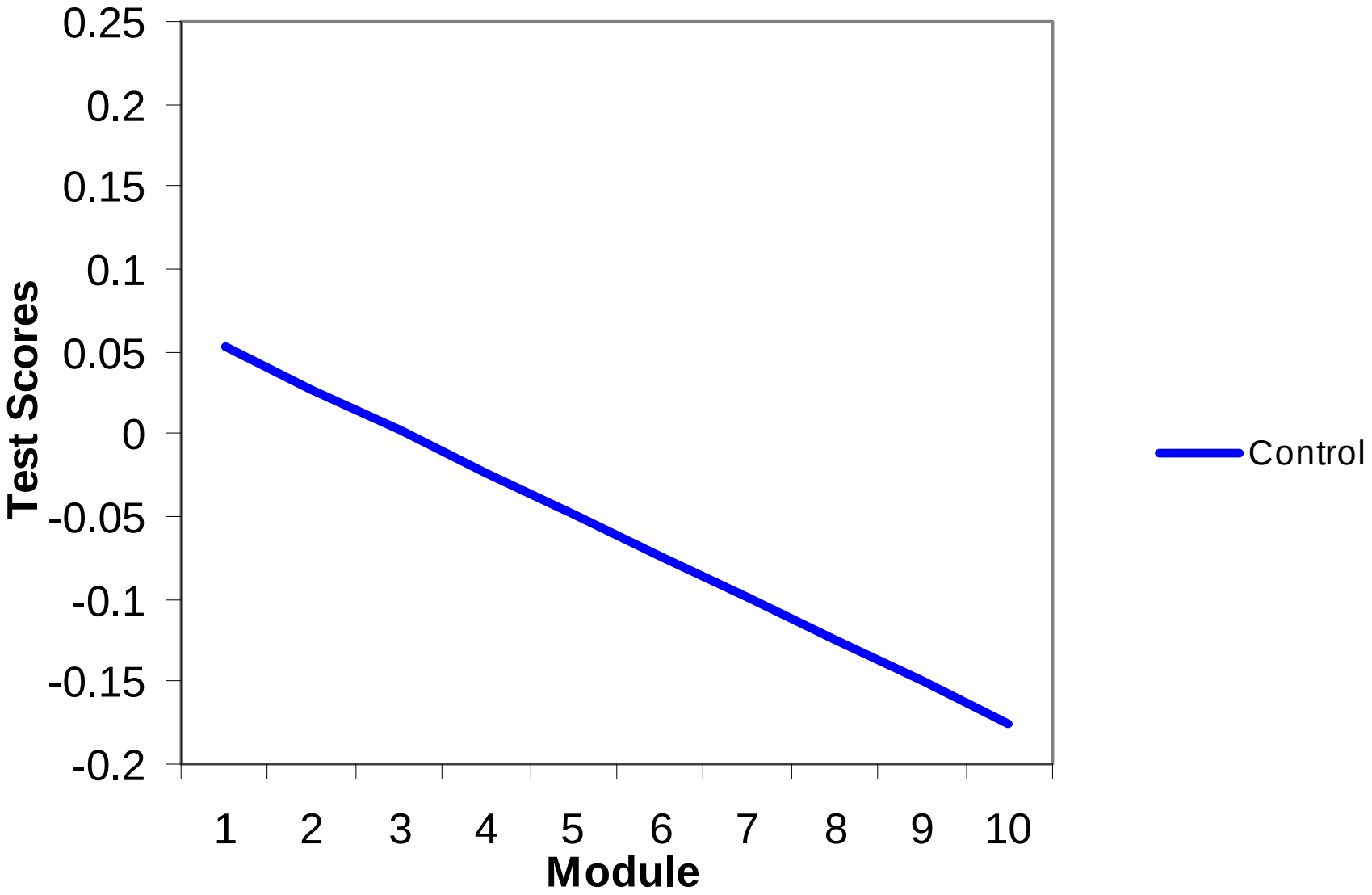
Study 1 Results



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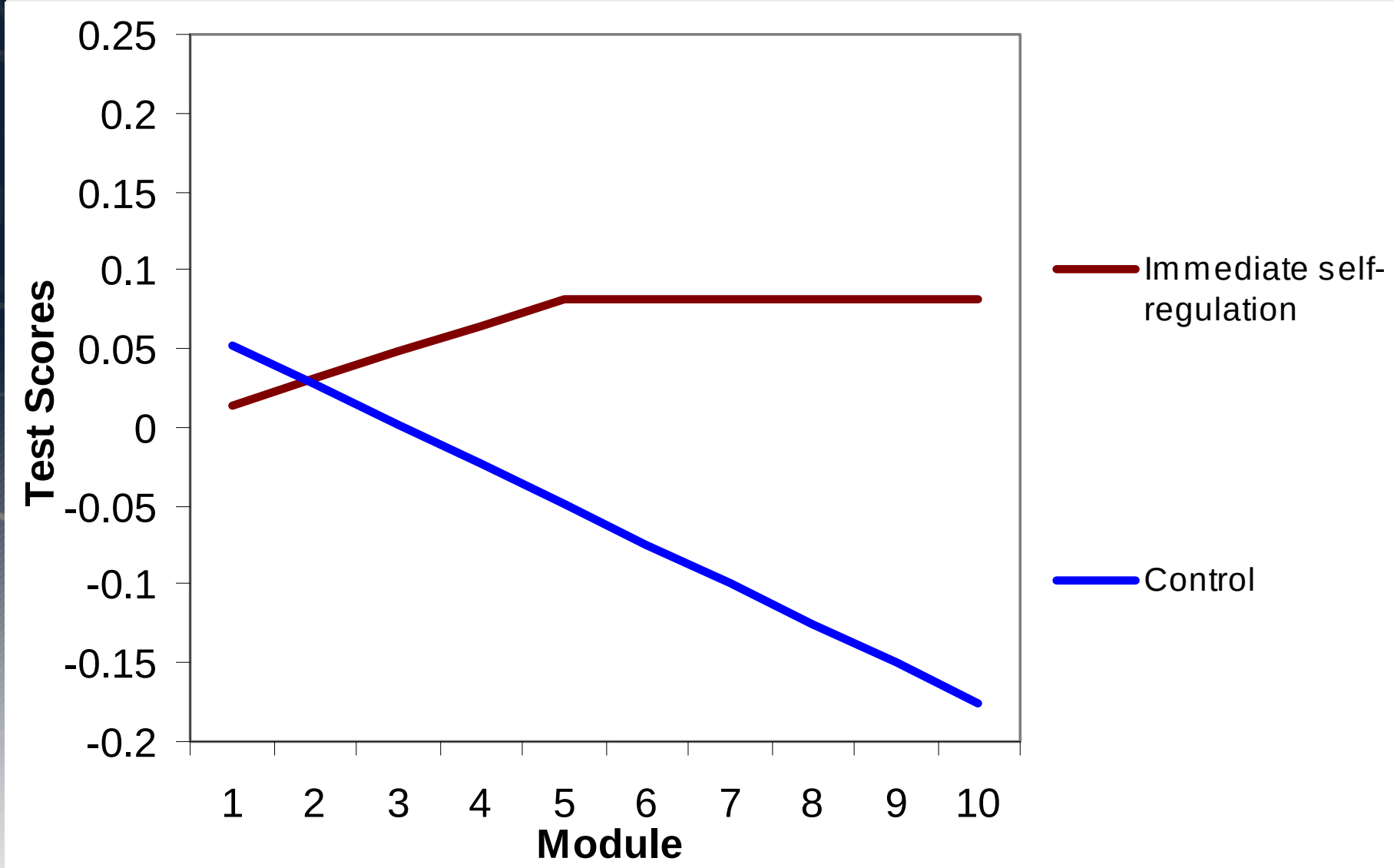

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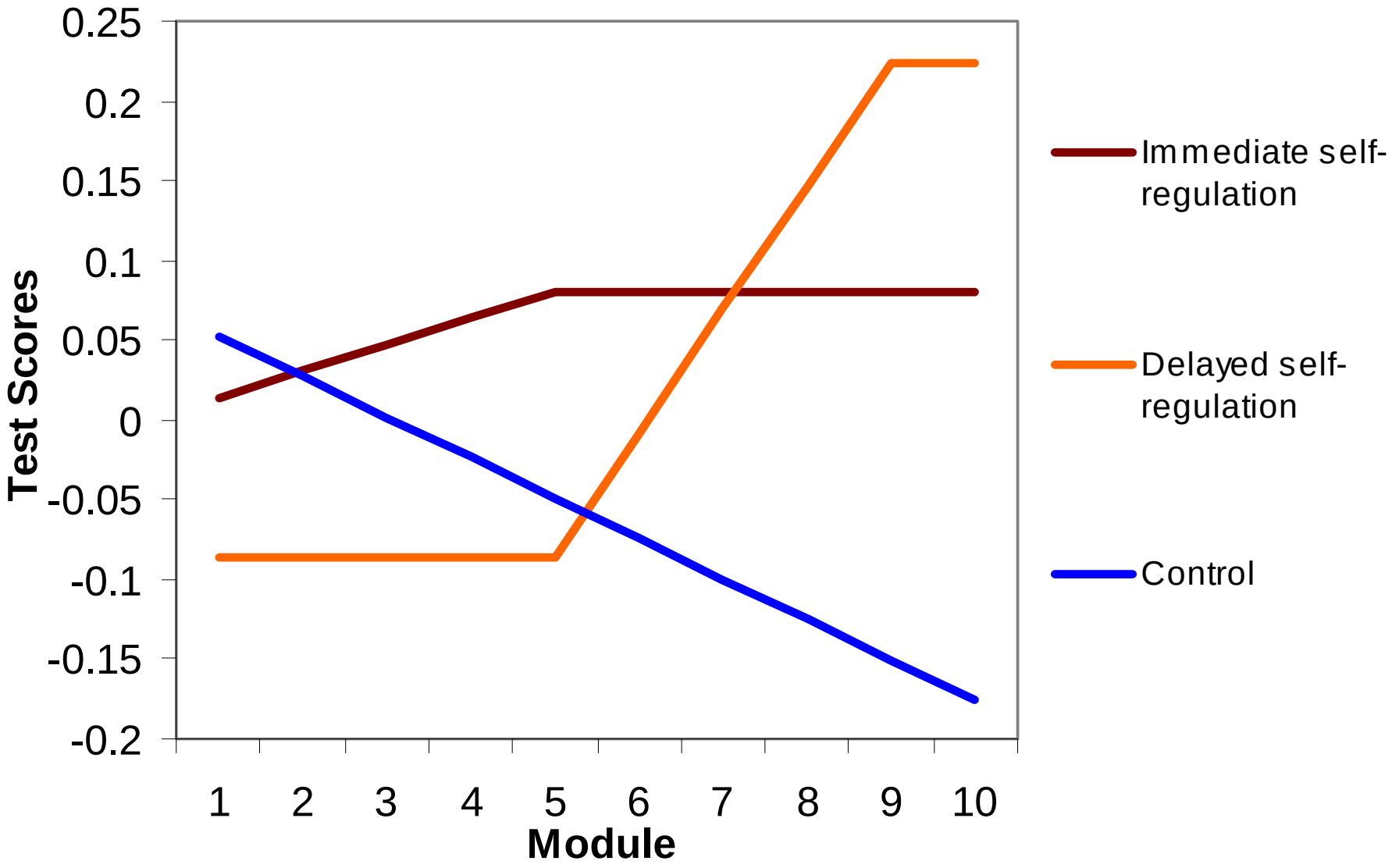

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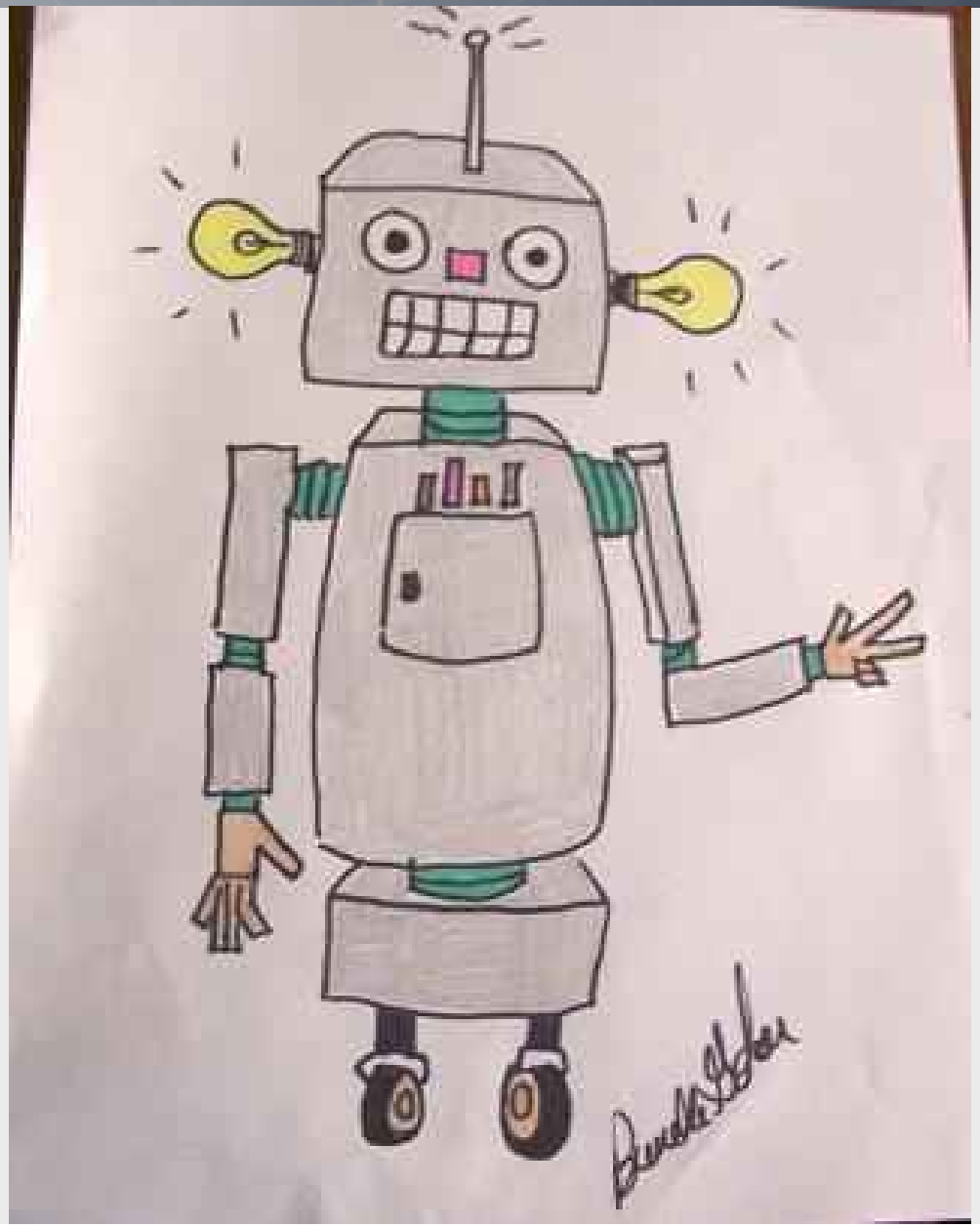
Basic Performance



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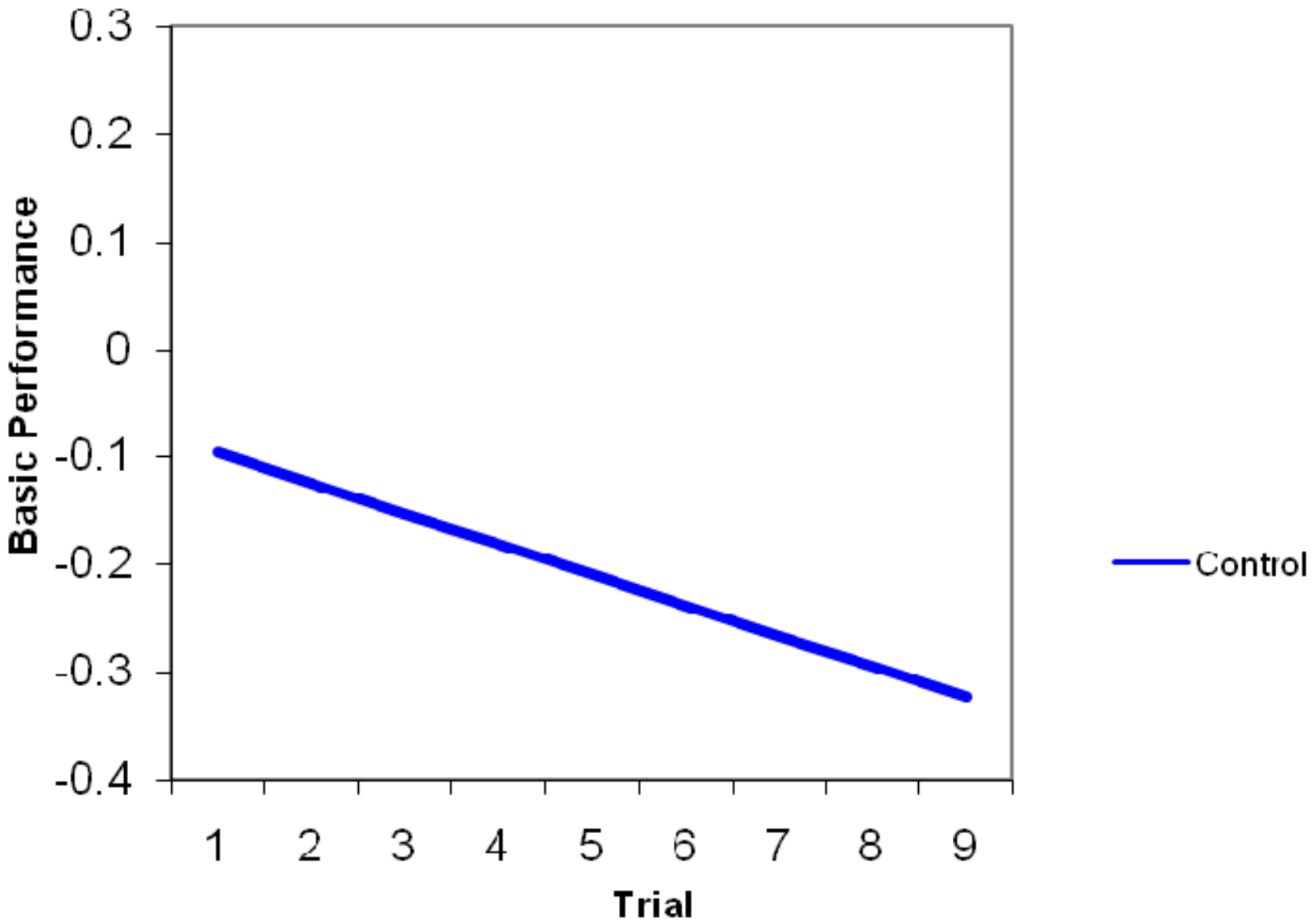
Study 2: Basic Performance



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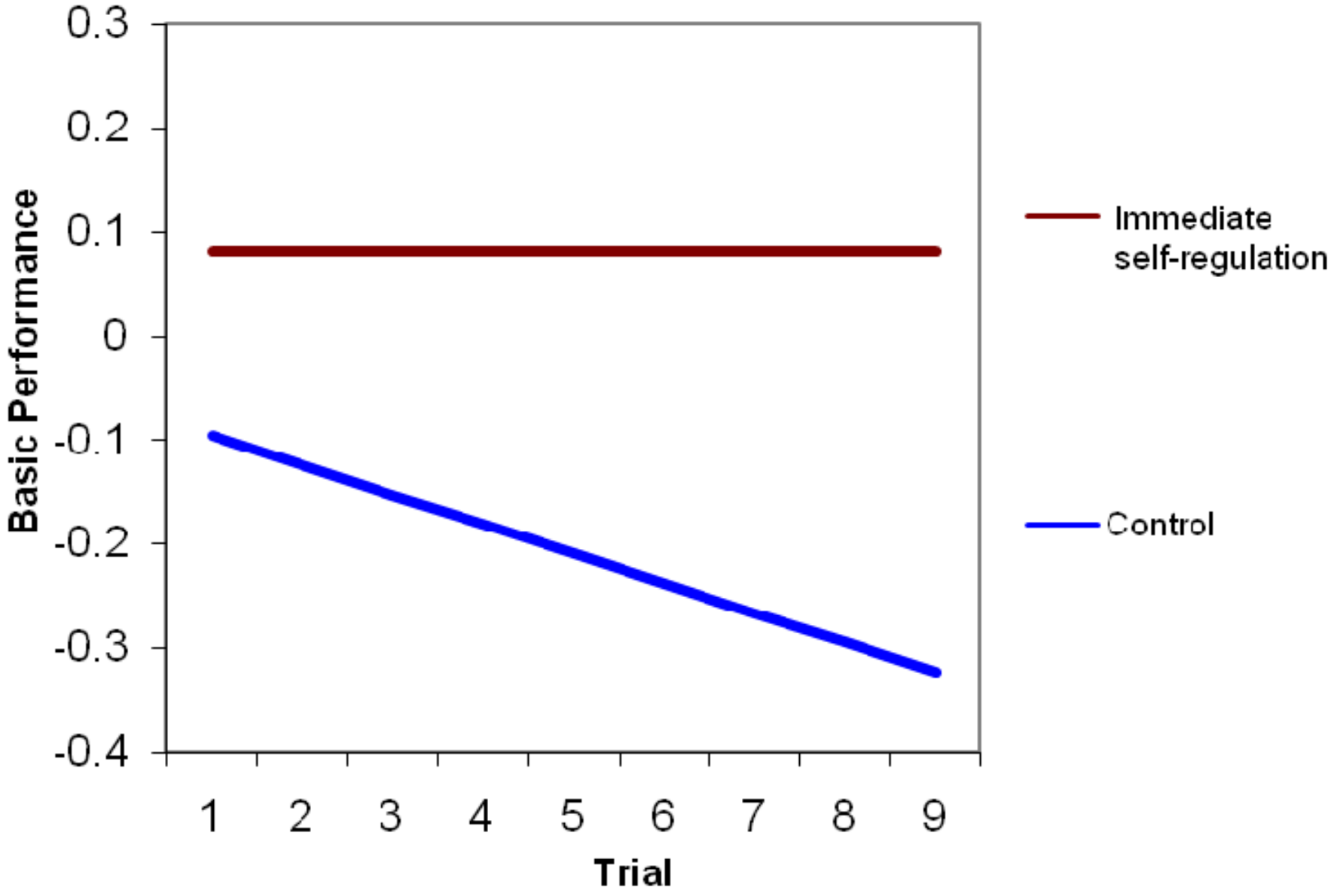

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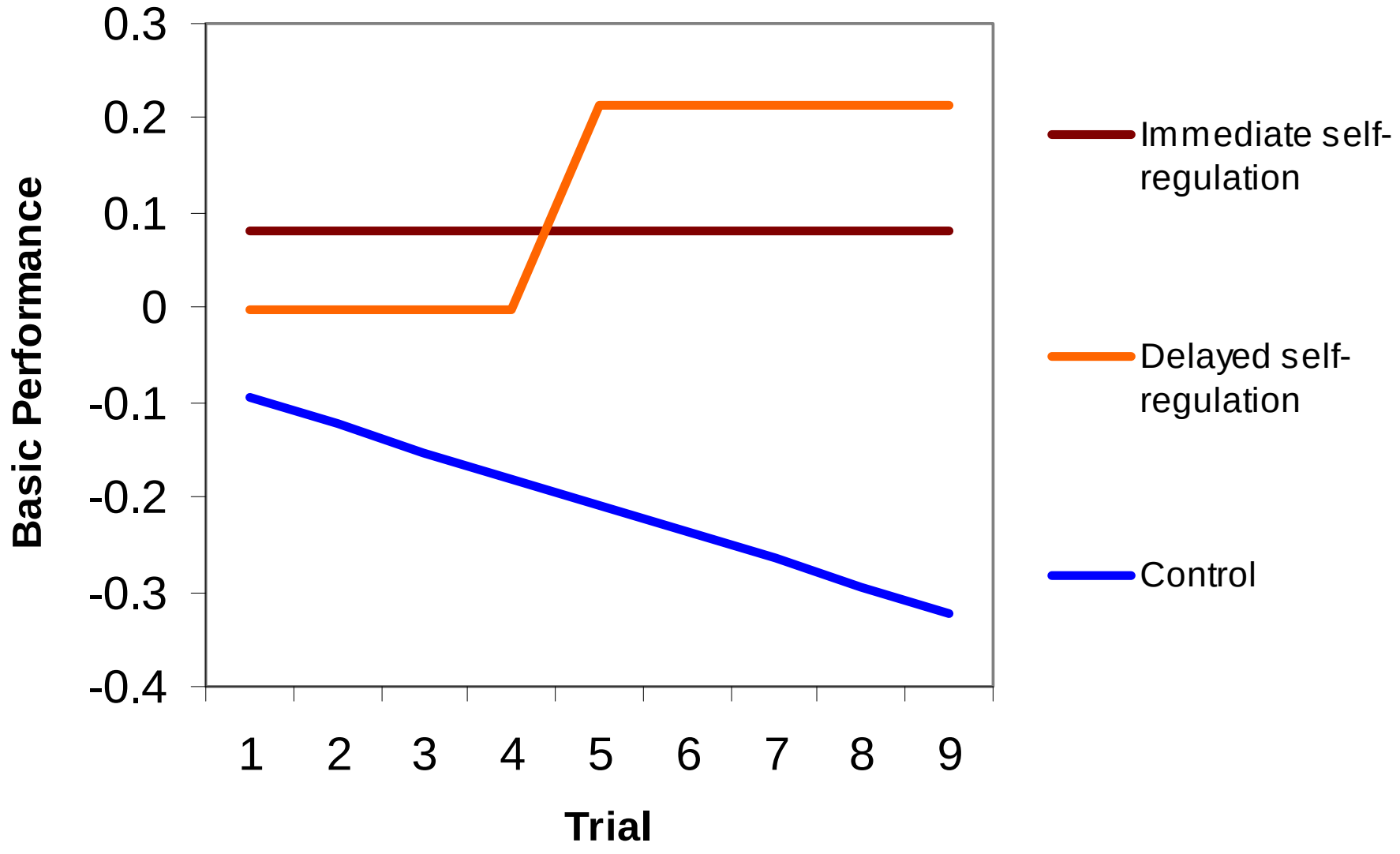

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Strategic Performance

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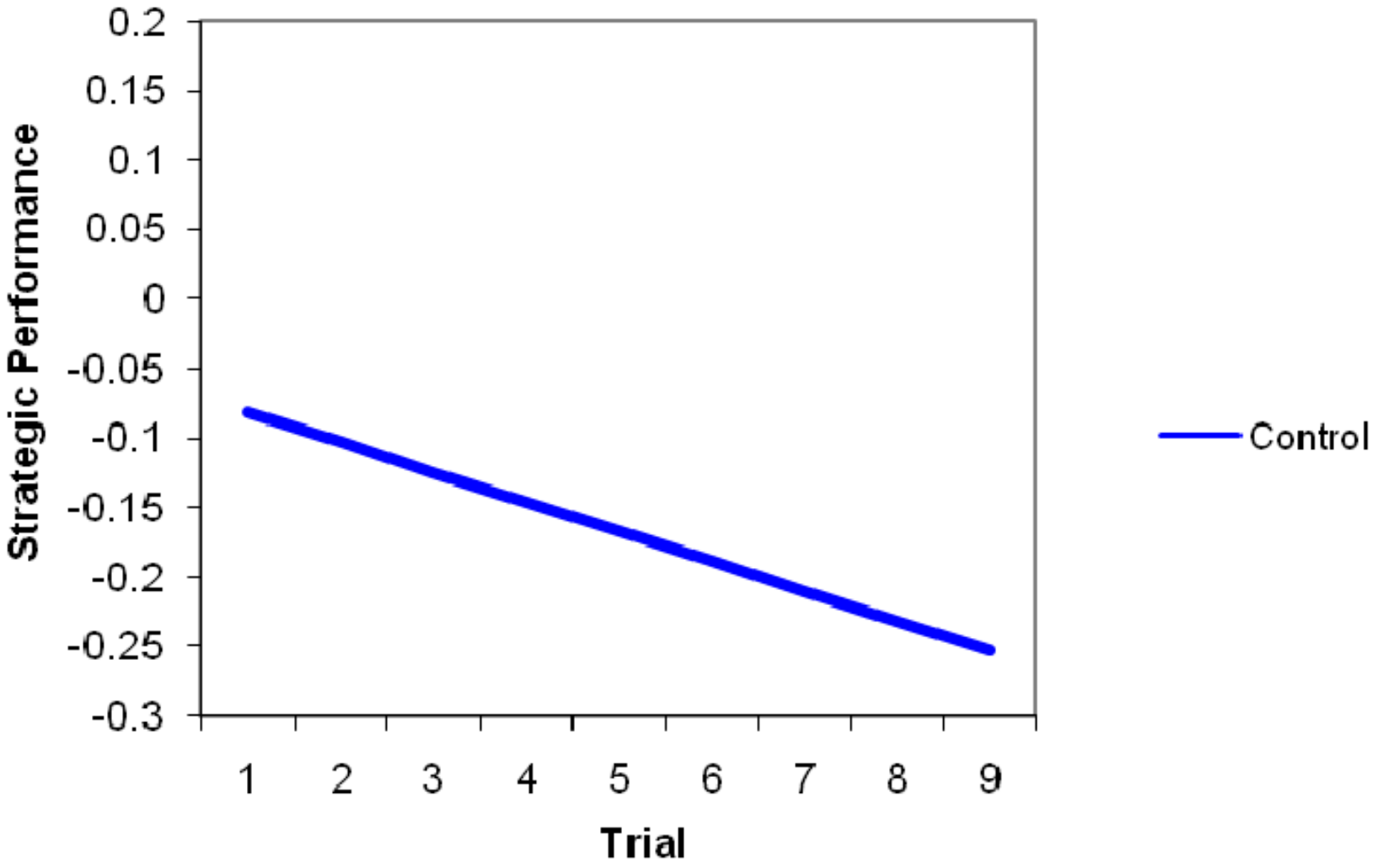
Study 2: Strategic Performance



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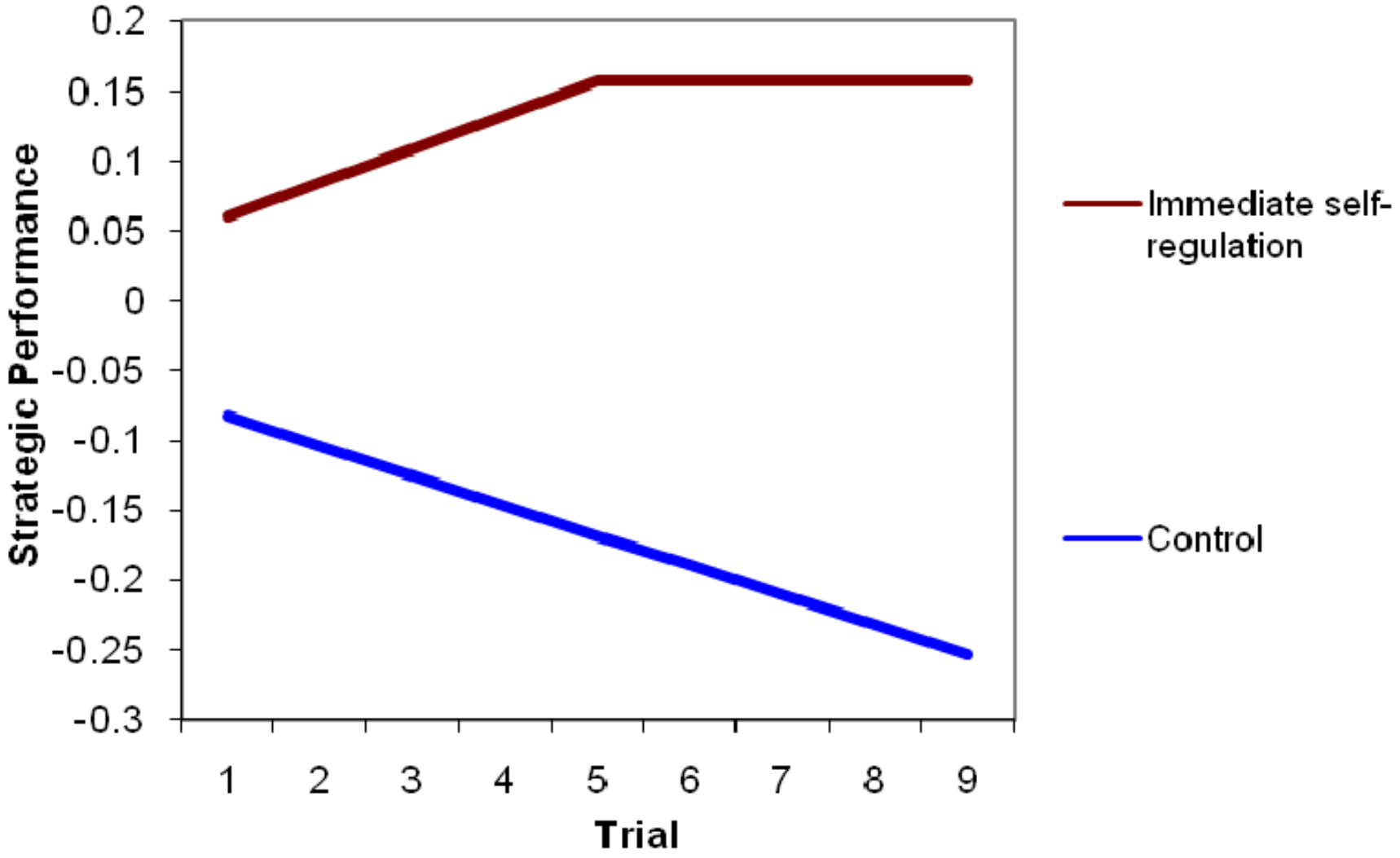
Study 2: Strategic Performance



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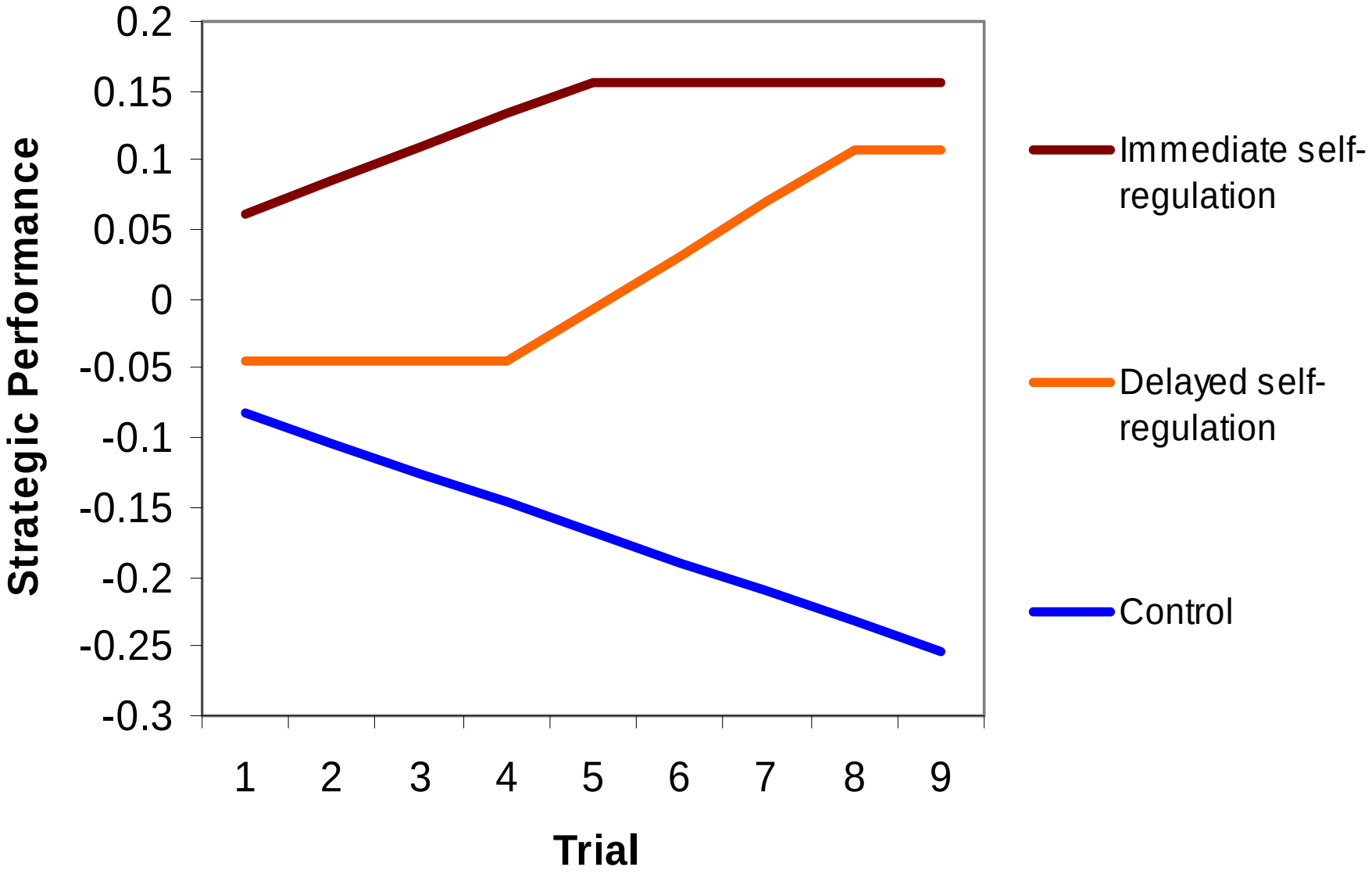

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Conclusions

- Adults are capable of managing their own learning when they receive reminders to self-regulate
- Prompting self-regulation is a no-cost intervention
- Can be incorporated in any Web-based training course

- I'll have that for you right away

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Interruptions in Web-based Training

- Interruptions are an externally generated, randomly occurring, discrete event that breaks continuity of cognitive focus on a primary task
- Interruptions may be problematic in Web-based training

Interruptions in Web-based Training

- Technical difficulties refer to interruptions individuals encounter when interfacing with technology
  - Low bandwidth
  - Incorrect configurations
  - Error messages
- Current study examines the effect of technical difficulties on:
  - Learning
  - Attrition

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Participants

- 530 adult trainees
- 75% were employed full or part-time
- 52% had a bachelor's or more advanced degree
- 69% female
- Average age = 41 years

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Research Methodology

- Training
  - 5 hour course on Microsoft Excel
  - 4 online modules
  - Measured learning at the end of each module
- Randomly assigned trainees to experimental conditions
  - Conditions differed in terms of the number of modules and the pattern of which of the 4 modules contained error messages

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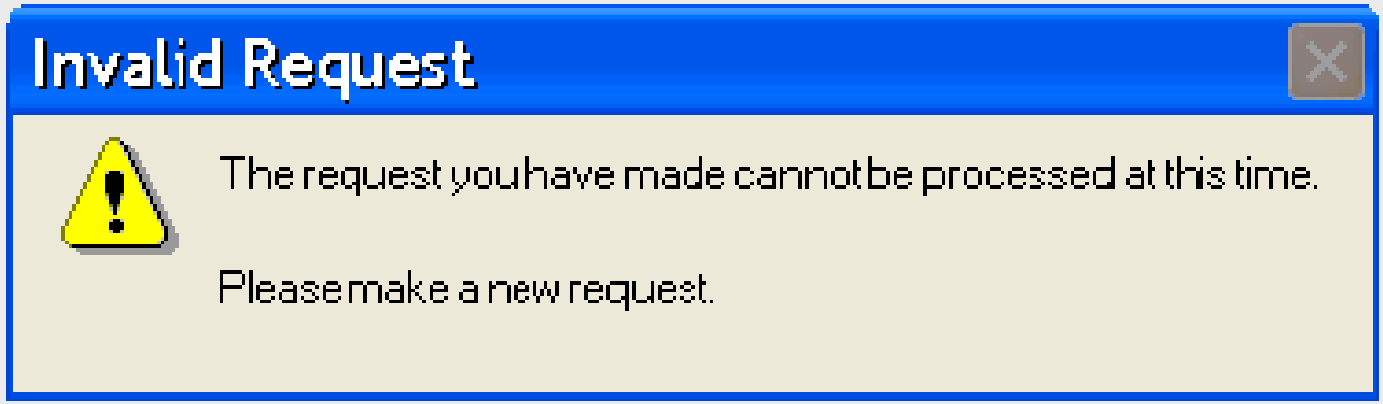
Editing a PivotTable Continued

- There are a few critical steps you



Authorization Error

You currently are not authorized to access this information.

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Attrition

- Only 19% of trainees who started the training completed the course
- Results are consistent with previous research indicating attrition is problematic in Web-based training

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Predicting Attrition

- Technical difficulties
  - Resulted in a 10 percentage point increase in the attrition rate in the first training module
  - Did not predict attrition in later modules
- Test scores
  - Predicted attrition in modules 2-4
  - Attrition was 18 percentage points higher for trainees with low test scores in the previous module

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Predicting Learning

- Test scores were 7 percentage points lower in modules with technical difficulties

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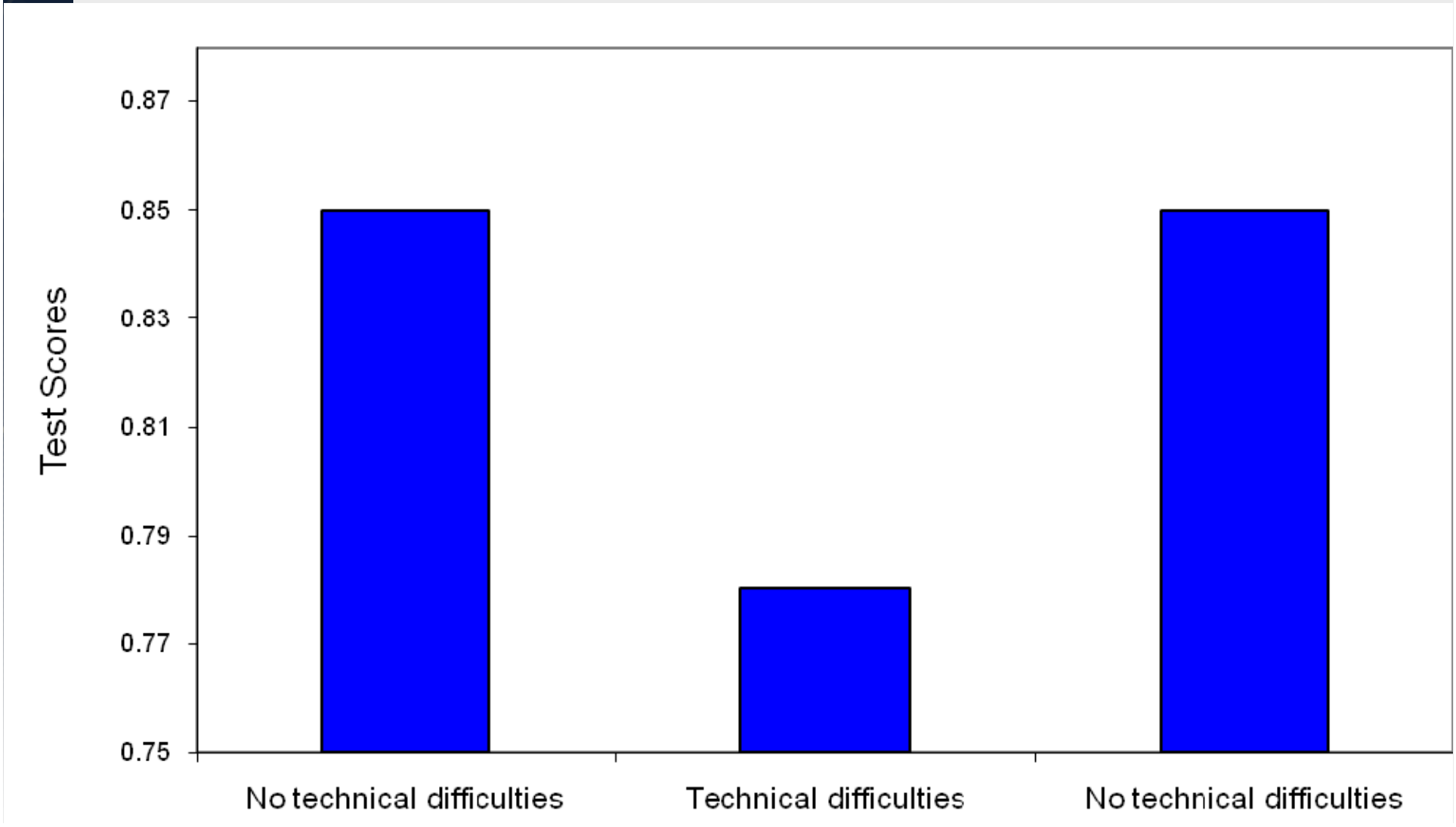
Lois Lane's Performance



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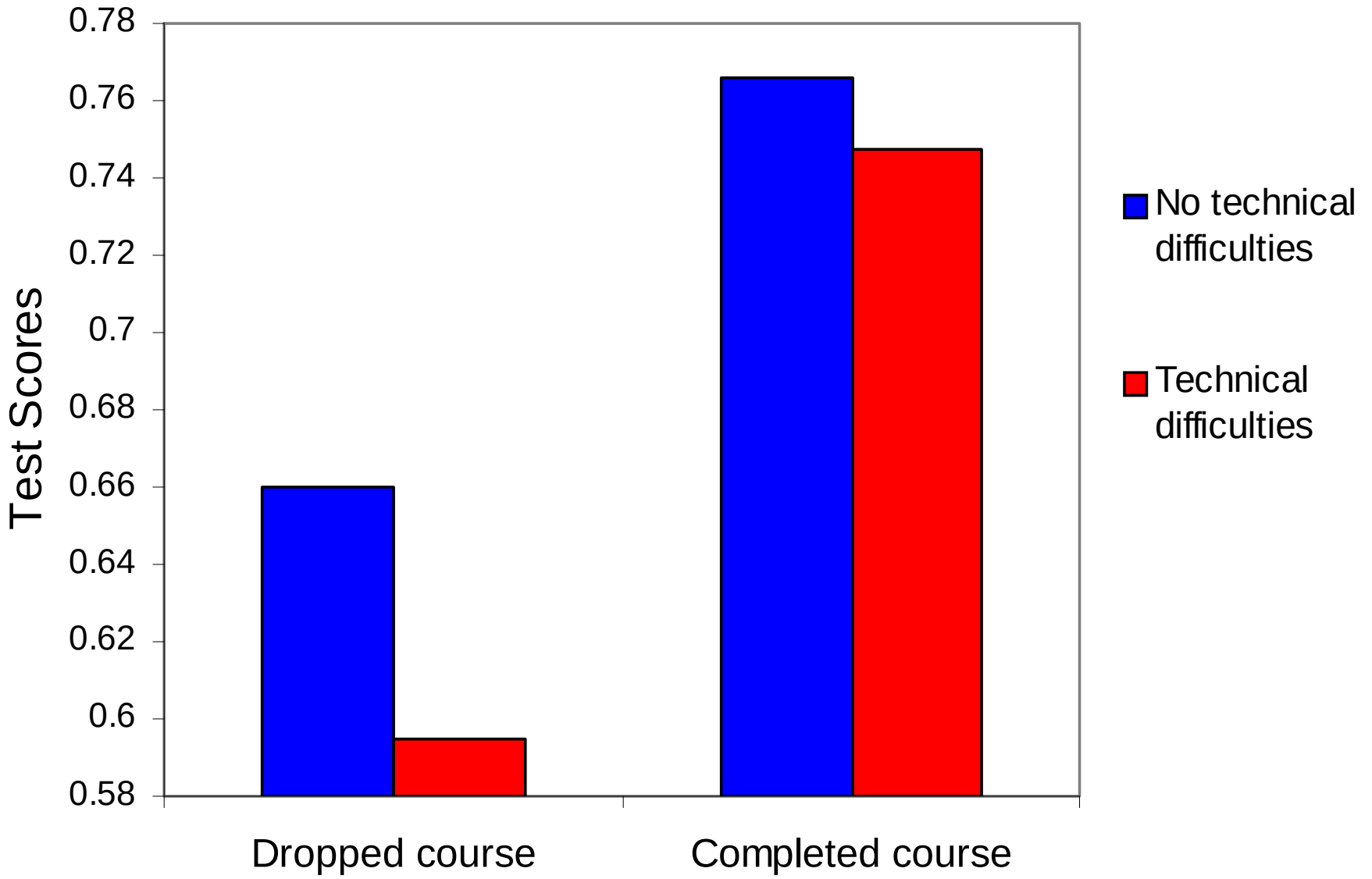
Predicting Learning



I hit the Control key...
so why am I not in control?

Negative Thoughts and Learning

- Cyclical relationship
- Negative thoughts impaired learning
  - For every one-point increase in negative thoughts, test scores were 7 percentage points lower
- Test scores predicted negative thoughts in the subsequent module
  - Negative thoughts were 1.70 points higher (on a 5 point scale) for trainees with low test scores

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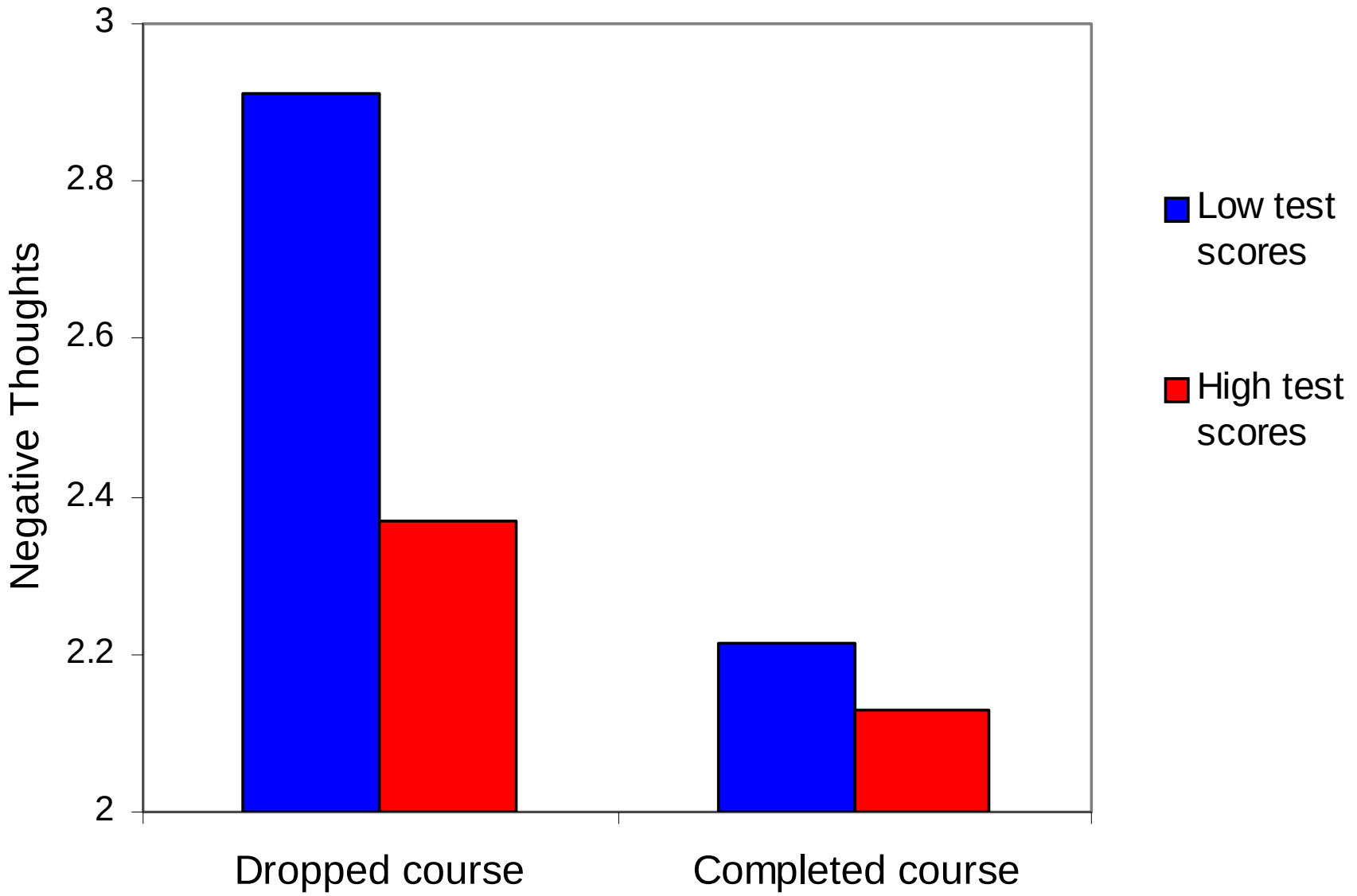
Predicting Negative Thoughts



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Summary

- Technical difficulties impaired learning and increased negative thoughts
- Cyclical relationship between test scores and negative thoughts
  - Low test scores → More negative thoughts
  - High negative thoughts → Lower test scores
- Predicting attrition
  - Module 1 → Technical difficulties
  - Modules 2-4 → Test scores

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Recommendations

- Provide access to Internet skills courses and technical support
- Trainees must have a reliable Internet connection
- Complete training in a quiet environment, free from distractions


Tap Tap
Tappity Tap
Tap
Do Not Disturb!
Don.

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Follow-Up Research

- Prompting self-regulation to mitigate the deleterious effects of technical difficulties
- Completion rate is 9 percentage points higher among trainees who are prompted to self-regulate

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Questions?

- For more information:
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