Effects of Course Structure on Metacognitive Regulation

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PSY 603S: Research in the Classroom
Dr. Bridgette Martin Hard
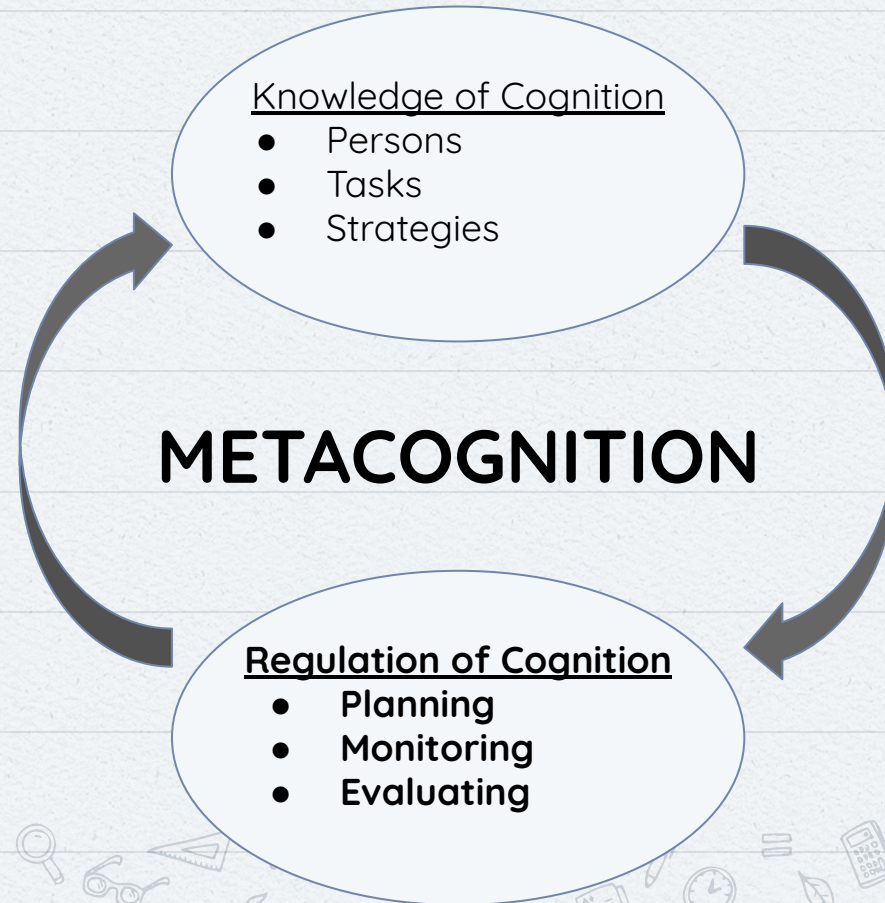April 6, 2020

Study motivation: The DUKE tbl experience

Knowledge of Cognition
- Persons
- Tasks
- Strategies

METACOGNITION

Regulation of Cognition
- **Planning**
- **Monitoring**
- **Evaluating**

Benefits of Metacognition

debugging
+
performance
evaluation

better goal setting

more accurate predictions

Conceptual framework

Knowledge of Cognition
- Persons
- Tasks
- Strategies

METACOGNITION

Regulation of Cognition
- **Planning**
- **Monitoring**
- **Evaluating**

Team-Based Learning

COURSE STRUCTURE

Traditional Lecture

RESEARCH QUESTION:

How does **course structure** affect students' engagement with **metacognitive strategies** related to regulation of cognition?

Hypotheses

- TBL students will report using strategies related to external motivators (i.e. group accountability, debugging) **more** than lecture students

- TBL students will report **increased frequency** in metacognitive strategy use over the semester

MEASURES: METACOGNITIVE AWARENESS INVENTORY

- An instrument designed to assess general self-regulated learning skills across the disciplines (Schraw and Dennison, 1994)

- 17 items to measure knowledge of cognition & **35 items to measure strategies for metacognitive process**

- Our study will use a **five-point scale**: 1 = "Not at all" to 5 = "Always"

MAI Sample Questions

2. I consider several alternatives to a problem before I answer.

6. I think about what I really need to learn before I begin a task

18. I use different learning strategies depending on the situation.

40. I change strategies when I fail to understand.

44. I reevaluate my assumptions when I get confused.

46. I learn more when I am interested in the topic.

MAI Sample Questions

Comprehension Monitoring

2. I consider several alternatives to a problem before I answer.

Planning

6. I think about what I really need to learn before I begin a task

Debugging

40. I change strategies when I fail to understand.

44. I reevaluate my assumptions when I get confused.

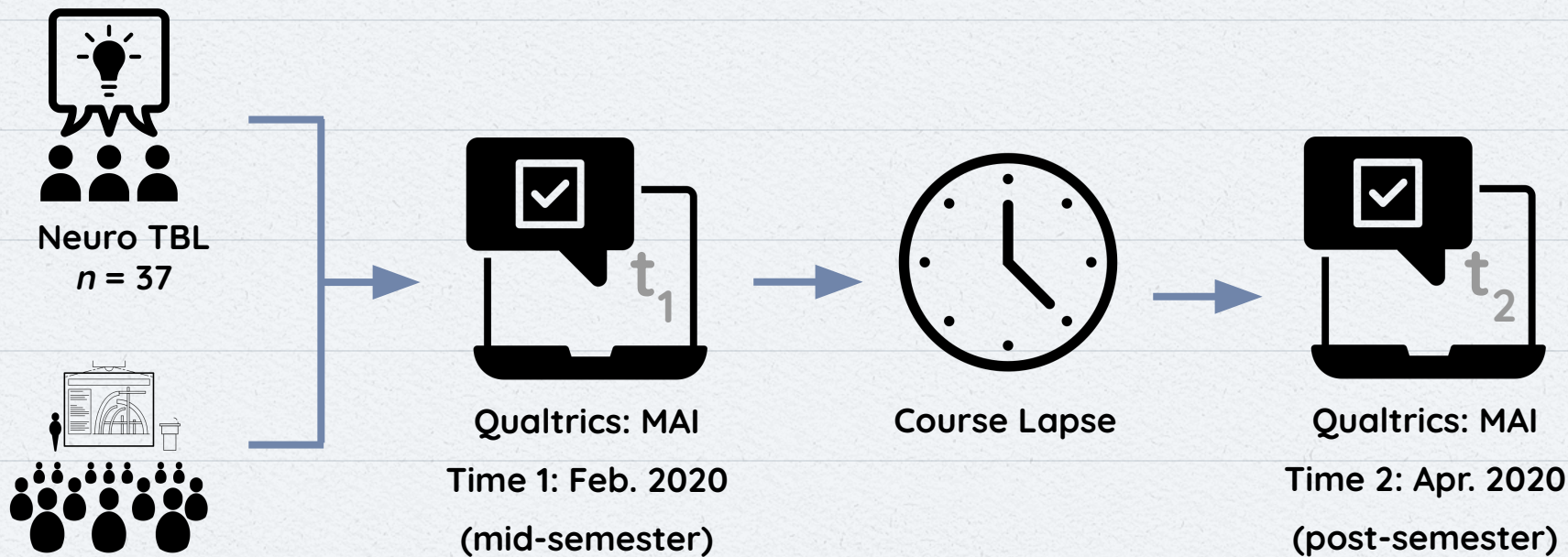## Information Management Strategies

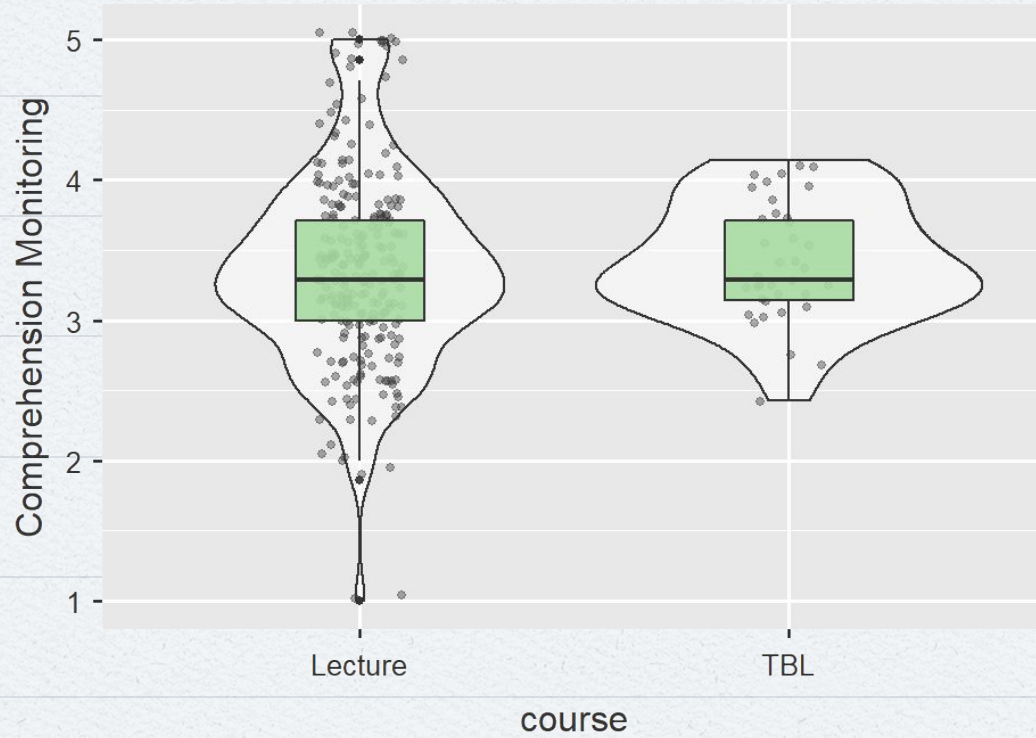**9.** I slow down when I encounter important information.

Evaluation
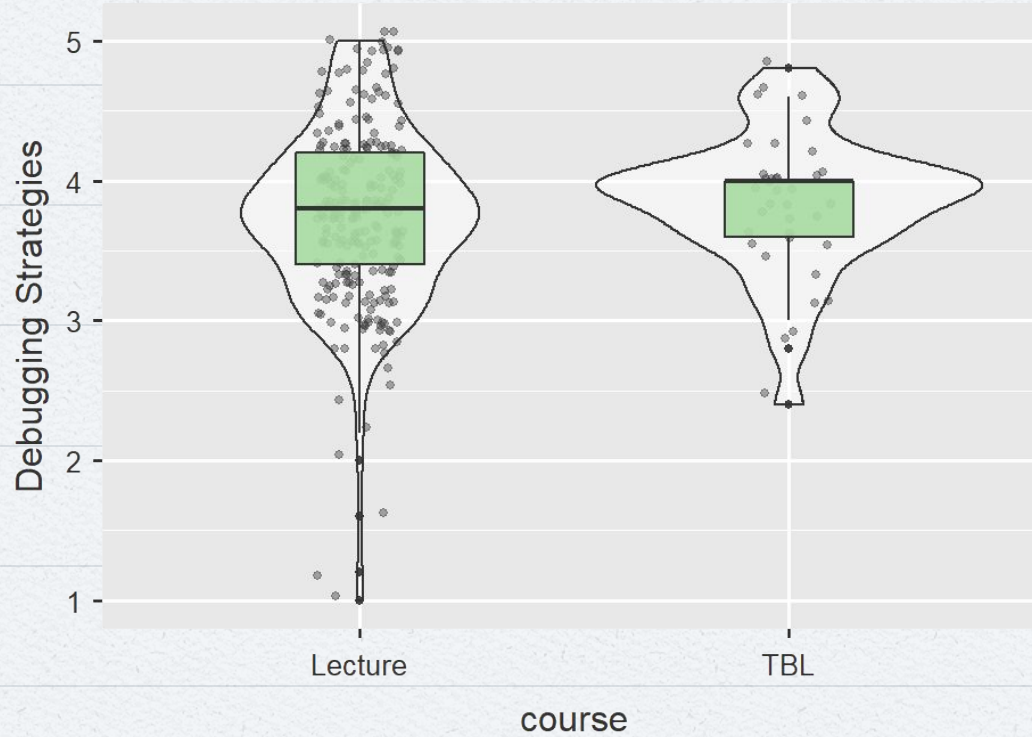
7. I know how well I did once I finish a test.

Proposed Methods

Neuro TBL
n = 37

Psych Lecture
n = 240

Qualtrics: MAI

Time 1: Feb. 2020

(mid-semester)

Course Lapse

Qualtrics: MAI

Time 2: Apr. 2020

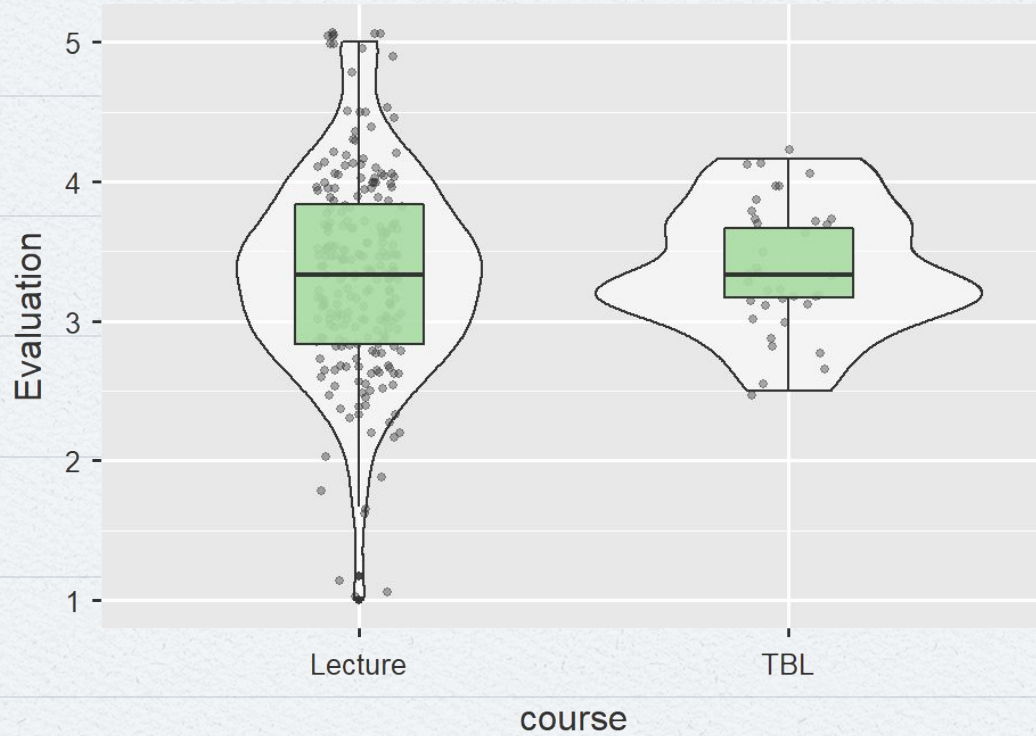(post-semester)

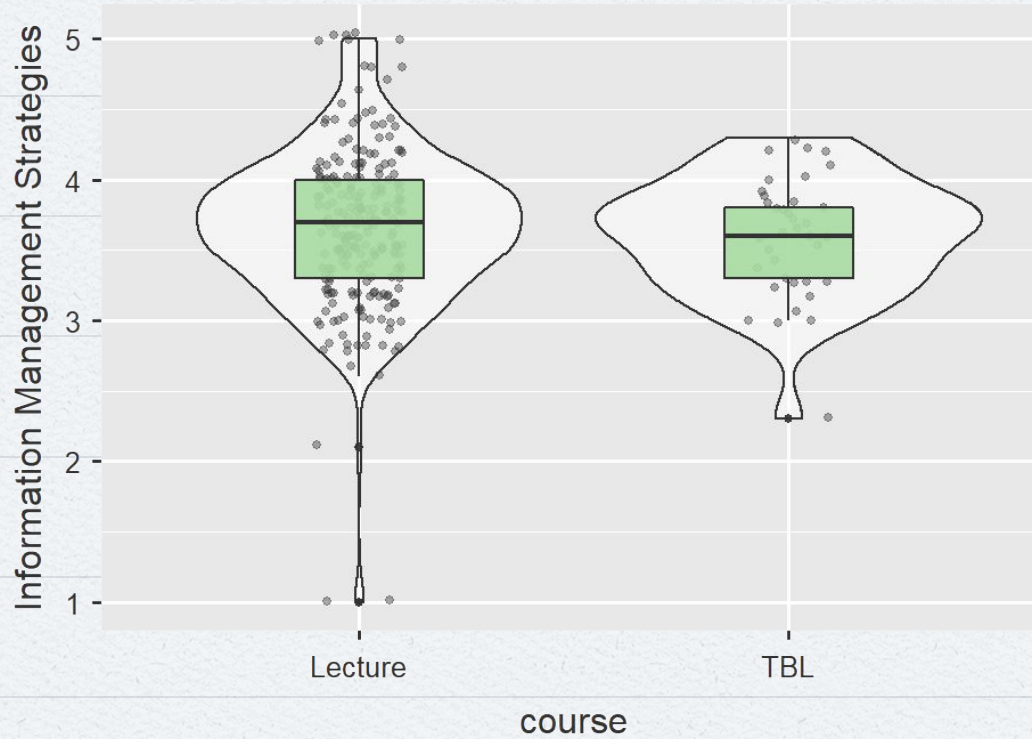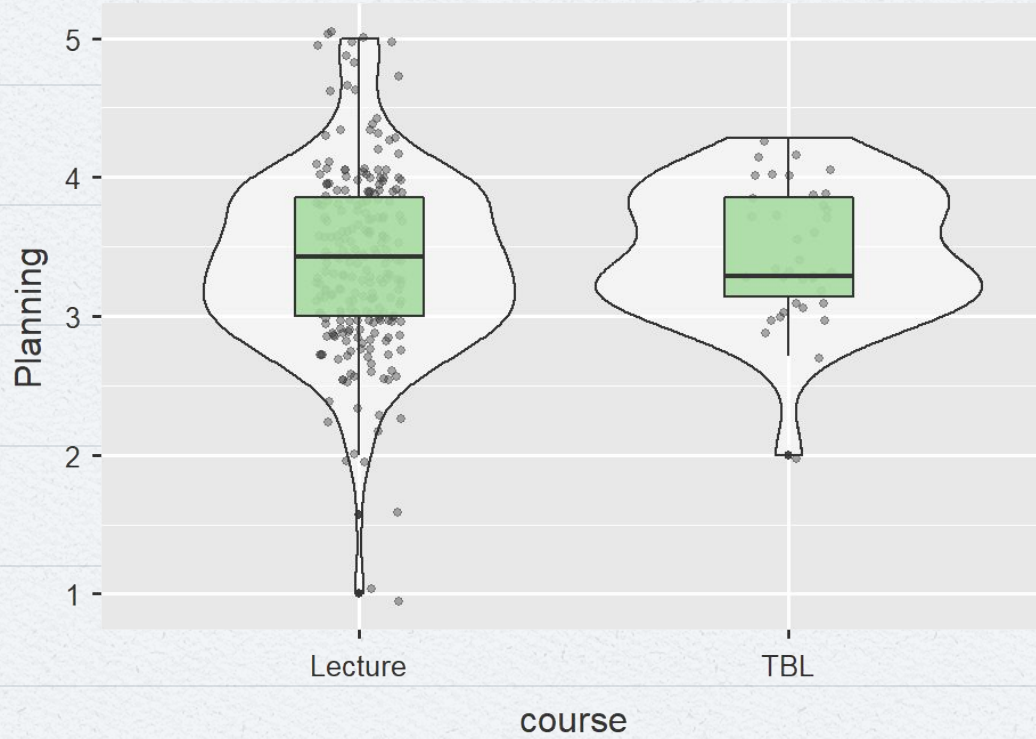# Pilot Data

Pilot Data

Pilot Data

Pilot Data

Pilot Data

Analysis Plan

- Mixed factor ANOVA

- Item level analyses (currently only categorized)

- Exploratory analyses: demographics (gender, race, etc.)

Interpretations and conclusions

- TBL groups enforce external accountability and pressure to be prepared

- TBL's emphasis on formative assessment makes studying different

- TBL more frequently requires students to go higher on Bloom's Taxonomy

- Lecture allows for more passive pacing and retention

https://wordpressua.uark.edu/wp-content/uploads/sites/315/2013/09/Blooms_Taxonomy_pyramid_cake-style-use-with-permission.jpg
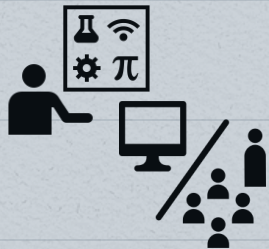
Future Directions

Fall 2020:
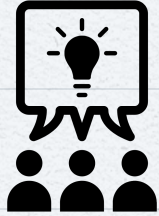data collection in classrooms

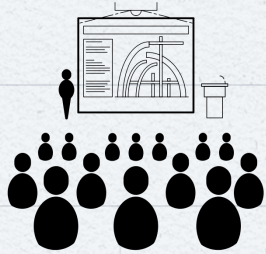performance + strategy use

replicate in other STEM/flipped classes

longitudinal data

Teaching implications

- How can educators suggest specific study strategies based on the structure of the course they teach?

- Metacognitive training interventions

Acknowledgements

Dr. Bridgette Martin Hard

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PSY 603 Classmates

BRITEideas

References

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Images from *The Noun Project* & *Flaticon*