# Metacognition in the Middle: Mismatch between Anticipated and Actual Exam Grades of Allied Health Students

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INDY ANATOMY

## INTRODUCTION

- **Metacognition** is the ability to regulate one's own learning and performance[1].
- Improved metacognition enables more accurate self-evaluation of knowledge and performance[2].
- A lack of metacognitive skill can result in over-estimation of abilities, under-preparation for examinations, and poor academic performance[2].

**Aim:** Assess the ability of allied health students to evaluate their exam performance in an anatomy course to identify which groups, if any, need support with this skill.

## METHODS

This study was exempted by the Indiana University Institutional Review Board (Protocols #1804885093, 2004367557)

**Physical Therapy Students** (n=44) | **Physician Assistant Students** (n=45) | **Occupational Therapy Students** (n=38)

**Pre-course Survey** (n=109)
- Demographics
- Metacognitive Awareness Inventory (MAI)

**ANAT D528: Gross Anatomy for Healthcare Professionals**
- Asynchronous Lectures
- Synchronous Virtual Labs
- TopHat Questions
- Block Examinations (n=4)

**Post-course Survey** (n=59)
- Metacognitive Awareness Inventory (MAI)

**Quantitative Analysis**
- Terciles based on mean exam performance
- Terciles compared using Kruskal Wallis H

**Metacognitive Awareness Inventory[3]**
- 52-item, true-false survey
- Assesses knowledge and regulation of cognition

**TopHat Questions**
- Real-time student polling software
- Reflective topics include:
  - Anticipated Exam Grade (n=3)
  - Exam Satisfaction (n=3)

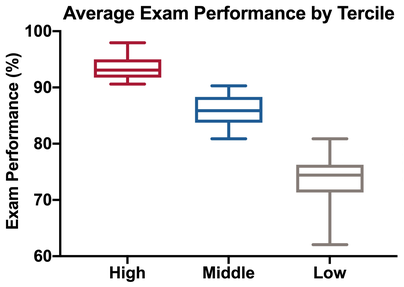
**Block Examinations**
- 85 questions total
  - 60 higher-order or clinical MCQs
  - 25 "tag"-style MCQs on cadaveric images

## RESULTS

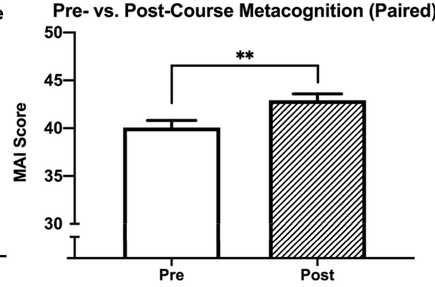
- A total of 113 (88%) and 59 (46%) students completed the pre- and post-surveys, respectively, resulting in 52 matched pairs (40%).
- TopHat participation ranged from 67% to 97% of students.

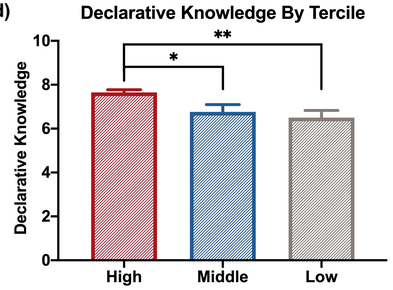
(Bar graphs = Mean±SEM)

### Exam Performance

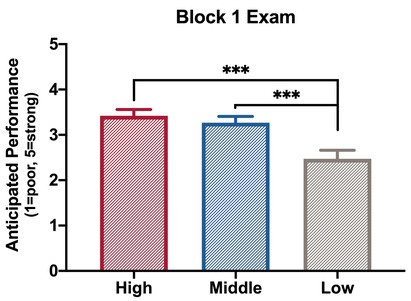


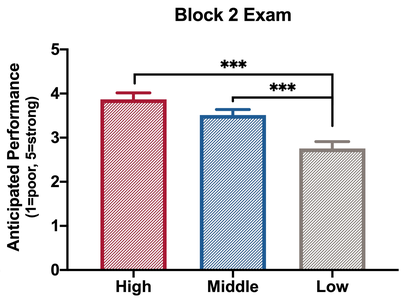

### Metacognitive Awareness Inventory

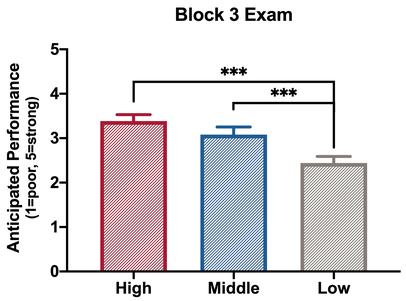


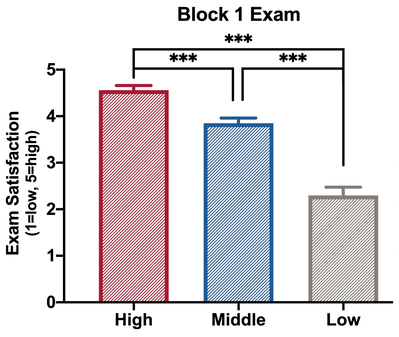

### Anticipated Block Exam Performance by Tercile

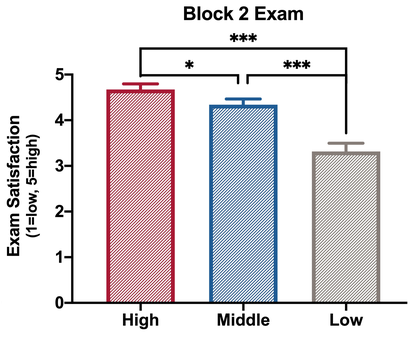


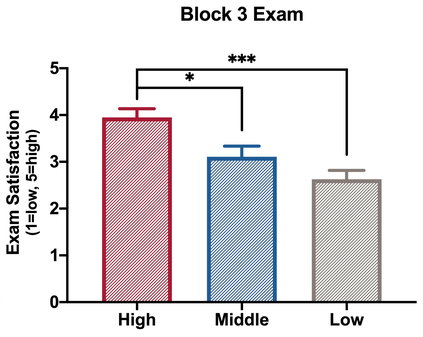




### Block Exam Satisfaction by Tercile




## CONCLUSION

- High-performers aimed and scored high and were mostly satisfied whereas low-performers aimed and scored low and were the least satisfied.
- Middle-performers anticipate strong exam performances, but fall short, leaving them less satisfied.
- Middle-performers have the greatest disconnect between their anticipated grade, actual grade, and exam satisfaction.
- This metacognitive disconnect may be related to how students use declarative knowledge to evaluate their understanding.

## SIGNIFICANCE

- Metacognitive activities that improve self-evaluation skills should be implemented in anatomy courses to minimize the disconnect between anticipated and actual exam performance.
- Middle-performers would likely benefit the most from these activities.

## ACKNOWLEDGEMENTS

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3. Schraw & Dennison. 1994. Assessing metacognitive awareness. Contemp Educ Psychol 19(4):460-475.

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