Implications of Adjunct Question Feedback on Learning and Metacognitive Accuracy

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Introduction

- Embedding questions throughout a lesson (i.e., adjunct questions) can improve metacognitive accuracy (Szpunar et al., 2014) and later performance (Szpunar et al., 2013).
- In authentic learning environments like the classroom, learners are often given feedback on these questions and that feedback can have differing effects depending on how elaborative it is (e.g., Butler et al., 2013).
- Explanatory feedback may provide a direct learning benefit by giving learners more or missing information to encode and may also provide an indirect benefit by cueing learners to where their understanding has not yet reached criterion.

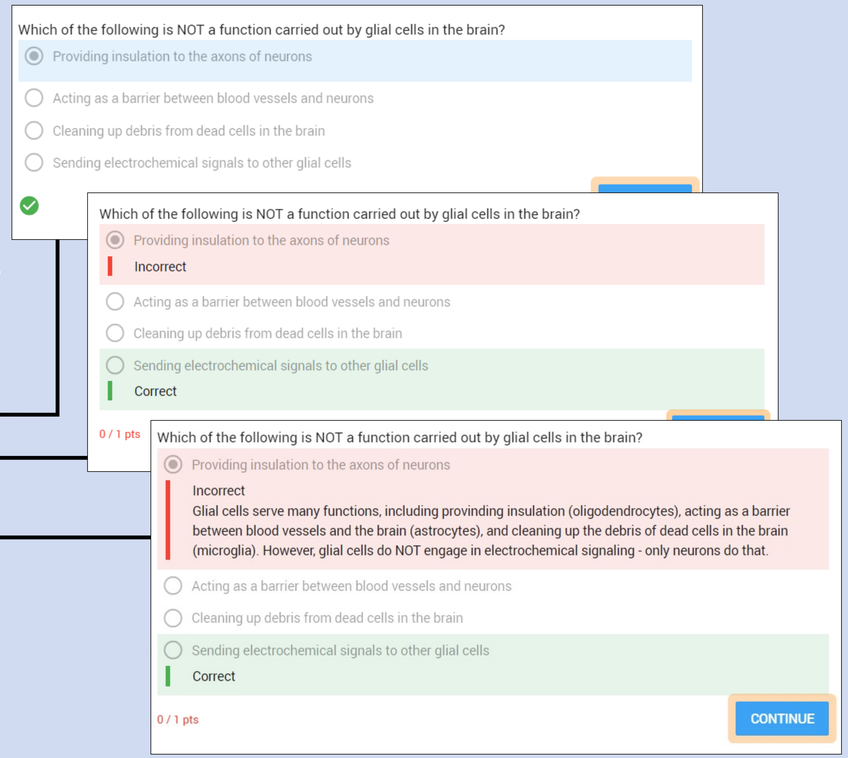
How does the type of feedback learners receive on adjunct questions affect their learning and/or their metacognitive accuracy in the classroom?

Manipulation

Large undergraduate cognitive psychology course (*N* = 332)

IV: Feedback type on AQ

- Within-participants, order fully counter-balanced
- Participants saw one of 3 types of feedback after answering multiple-choice AQ embedded within each video lecture
  - None: no feedback
  - Accuracy: correct answer choice
  - Detailed: explanation for each answer choice
- Each feedback type was assigned for one third of the course (3-4 weeks of instruction)



Outcome Measures

DV1: Test Performance

- 31 module quizzes (3 short answer items, 5-9 multiple choice items)
- 10 weekly quizzes (10 MC items)
- 3 exams (25-50 MC items)

DV2: Metacognitive Accuracy

- Module quiz prediction:

  "Out of __ multiple-choice questions, how many do you think you'll answer correctly?"
- Exam post-dictions:

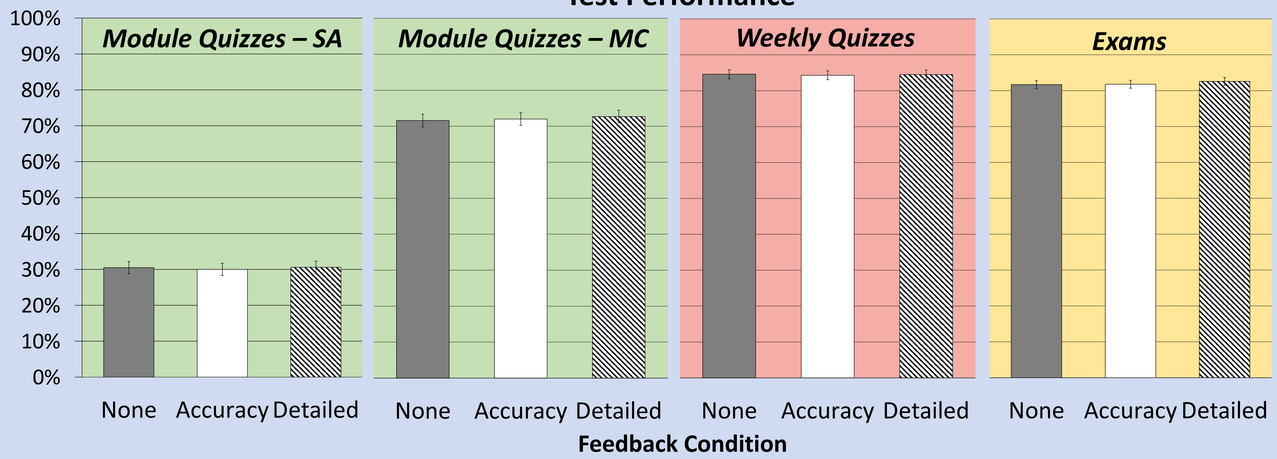
  "How many of the multiple-choice questions did you think you would answer correctly before seeing the questions?"

  "How many of the multiple-choice questions did you think you would answer correctly after seeing the questions?"

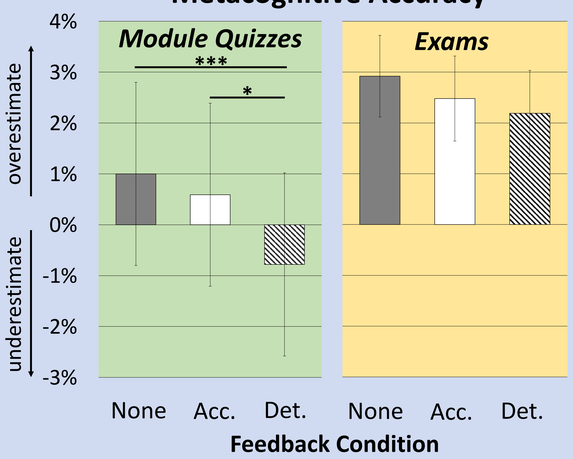
(accuracy = pre or postdicted score – actual score)

Results

Test Performance



Metacognitive Accuracy



Discussion

- Detailed feedback led to slight underestimation in metacognitive predictions, while no feedback and accuracy feedback led to slight overestimation.
- Feedback type did not influence performance for module quizzes (short answer or multiple choice), weekly quizzes, or exams.
- Feedback type may have influenced how students studied and interacted with course materials outside of assigned work, which in turn influenced their performance on later quizzes and exams.
- Instructors can implement detailed feedback to help students accurately judge their own learning.