

Implications of Adjunct Question Feedback on Learning and Metacognitive Accuracy Inez Zung & Emma H. Geller | University of California San Diego

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 Which of the following is NOT a function carried out by glial cells in the brain? Providing insulation to the axons of neurons Large undergraduate cognitive Acting as a barrier between blood vessels and neurons psychology course (N = 332) Oleaning up debris from dead cells in the brain IV: Feedback type on AQ O Sending electrochemical signals to other glial cells Within-participants, order fully Which of the following is NOT a function carried out by glial cells in the brain? counter-balanced Providing insulation to the axons of neurons Participants saw one of 3 types Incorrect of feedback after answering Acting as a barrier between blood vessels and neurons multiple-choice AQ embedded Cleaning up debris from dead cells in the brain within each video lecture Sending electrochemical signals to other glial cells None: no feedback ← Which of the following is NOT a function carried out by glial cells in the brain? Accuracy: correct answer ___ Providing insulation to the axons of neurons choice Glial cells serve many functions, including provinding insulation (oligodendrocytes), acting as a barrier Detailed: explanation for between blood vessels and the brain (astrocytes), and cleaning up the debris of dead cells in the brain (microglia). However, glial cells do NOT engage in electrochemical signaling - only neurons do that. each answer choice Acting as a barrier between blood vessels and neurons Each feedback type was Cleaning up debris from dead cells in the brain assigned for one third of the O Sending electrochemical signals to other glial cells course (3-4 weeks of Correct

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:

CONTINUE

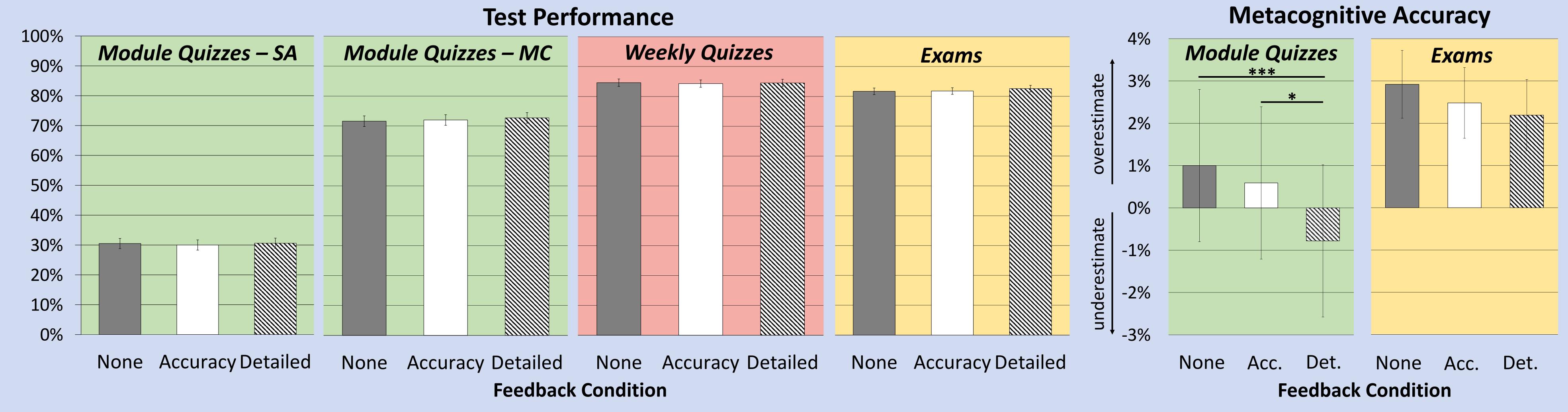
"How many of the multiple-choice questions did you think you would answer correctly before seeing the questions?"

"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

instruction)



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.