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**REPLICATION OF PSYCHOLOGY EXPERIMENTS: ENGAGING SCIENTIFIC AND
STATISTICAL REASONING IN THE CLASSROOM**

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ABSTRACT

INTRODUCTION: Undergraduate psychology degree programs offer myriad opportunities to acquire breadth across multiple areas. However, acquisition of depth in a discipline tends to be more resource intensive, and fewer opportunities are available. In our sensation and perception laboratory course, students are enabled to conduct sensation and perception experiments in order to experience scientific knowledge construction.

METHODS: Students gain hands-on experience in the techniques and procedures of perceptual psychophysics and psychology research. Activities in the experimental laboratory challenge students to think carefully and critically about numerous aspects of the research process in order to understand benefits and limitations of the scientific method in psychological research. After completing a progression of small assignments involving data manipulation, students conduct instructor-supervised group projects to replicate published sensory processes experiments.

RESULTS: After designing and conducting their replication experiment, students collect behavioral data, and grapple with producing tables, visualizations, and inferential statistics in order to compare data with experimental results from the original research. Results from experiment replications often are quite different from the original experiment, and even when results are similar the students' first-hand experience with the experiment and data are different in detail and content what is represented in the publication.

DISCUSSION: At the conclusion of the course students judge similarities and differences between methods and results of their own replication experiment in comparison to the original experiment. In order to apply methods of scientific communication, students summarize results and experiences, do lab write-ups, present data talks, and write a final paper. The approach of the laboratory course allows students to engage in statistical and scientific reasoning by comparing results from the original experiment to results from their replication. Activities that focus on the application of knowledge and skills allows students to develop epistemic practices that are not afforded in many of their other classes.