Mental Rotation Experiment — INFORMATION FOR INSTRUCTORS

**Purpose of this Project:** After completing this project, your students should have a better understanding of the difference between independent variables and dependent variables, as well as the use of t-tests to test the effect of an independent variable on a dependent variable. Your students will also gain some familiarity with the use of *reaction time as an index of mental processing*. This project also provides a good opportunity to review the concept of spatial cognition (“non-verbal thinking”) and discuss gender similarities and differences on cognitive tasks. Instructor resources for this project are available at:  
🡺 https://facultypsy.hope.edu/psychlabs/exp/rotate/resources.html

**Preparation for Data Collection**

1. Distribute the Mental Rotation Data Sheet to each student as a handout, or post this direct link to the Data Sheet, or download the Data Sheet PDF and post that document.  
🡺 https://facultypsy.hope.edu/psychlabs/exp/rotate/docs/Rotate\_DataSheet.pdf

2. Explain that students will receive their own individual results the end of the experiment. They should copy those results onto their data sheet and should then graph their performance on the top graph of the data sheet.

3. Post this direct link to the Mental Rotation Experiment. Establish a due date for completing the experiment and announce a date when the pooled results will be available.  
🡺 https://facultypsy.hope.edu/psychlabs/exp/rotate/

4. Explain that, when the pooled results become available, students should copy the group results for use in their Lab Report and graph the pooled results on the bottom graph of the data sheet.

**Background Readings:** After data collection is complete, you should make two readings available to your students, either by posting these direct links or by downloading the PDFs and posting those documents.

🡺 https://facultypsy.hope.edu/psychlabs/exp/rotate/readings/ShepardMetzler\_1971.pdf

🡺 https://facultypsy.hope.edu/psychlabs/exp/rotate/readings/Rotate\_Background.pdf

One reading (Shepard & Metzler, 1971) is the classic study on mental rotation of three-dimensional objects. The second is a one-page handout that provides some background information about mental rotation plus a detailed description of the methodology used in this experiment. In addition, you should direct your students to read the appropriate material about spatial/non-verbal thinking and/or gender differences on cognitive tasks from your textbook. The relevant sections may be titled something similar to “Thinking in Images” and “Gender Similarities and Differences.”

**Instructions for Writing the Lab Report:** You may choose to have students write and submit a full typed lab report (using the *Report Template* document or the *Report Recipe* document), or have students prepare a simpler lab report by filling in the *Report Worksheet* document. Before they begin writing the report, they should have 1) the statistical results from the pooled data (see the Sample Results Summary document), and 2) your own guidelines for the report in the form of a report template, recipe, or worksheet.