This lab exercise appeared in Section VI: Cognition, developed by Amy C. Fineburg & Suzanne C. Baker, in *Promoting psychological science: A Compendium of laboratory exercises for teachers of high school psychology* (Miller, 2018). This exercise is provided here with permission from the editor.

Lab Title: Cognitive Biases

Section 1: Performance Expectations

What will the student be asked to do?

- Select one or more performance standards:
  - Plan and/or carry out a scientific investigation related to cognitive biases
  - Summarize data
  - Communicate their findings and generate possible explanations

Main Idea/Concept Demonstrated or Taught by Lab:

Students will collect data that demonstrate common cognitive biases. At the end of the lab, students should be able to:

Understand various cognitive biases.

Identify factors that can influence responses to surveys and questionnaires.

Summarize data and calculate descriptive statistics.

Explain the cognitive processes underlying their results.

Key Terms and Psychologists Associated with Main Idea/Concept:

Cognitive biases, representativeness heuristic, availability heuristic, framing effect, anchoring effect, confirmation bias, hindsight bias, Amos Tversky, Daniel Kahneman

Materials:

Students will need to identify a small group of participants who will complete a questionnaire, either in written or oral form. Depending on the specific goals of the lab, participants may need to vary in age. Parental consent will be needed if any children serve as participants. Copies of questionnaires and data collection sheets will be needed once the questionnaire is constructed.

Instructions:

1. *Students should construct a questionnaire consisting of questions that elicit cognitive biases. This activity could be done as an in-class project, with students drawing examples from their textbook and other resources. For a more advanced exercise, have students develop their own examples of these cognitive biases and translate these into questions. Issues for the teacher and student to consider include:*
   - Which cognitive biases to focus on and include in the questionnaire.
   - Optimum length of the questionnaire and how this influences response.
   - Order of questions and how this influences responses.
2. The class should develop a plan for data collection. Questions to consider include:
   - Number of participants needed
   - Age and other demographic characteristics of participants

- Ethical considerations, including informed consent and debriefing

3. Students may collect data as individuals or in pairs or small groups, depending on the size and nature of the class.
4. Students should bring data collection sheets or questionnaires back to class by a specified due date. In class, have students pool their data.
5. Students can then calculate descriptive statistics, analyze the data, and construct appropriate figures to summarize the data. This could be done as homework or as a small group project within the class, depending on the level of the class and the number of students.
6. Have the students write a report summarizing the results of tests of each concept.
7. Age may affect responses to some of the questions. For example, older adults may be more susceptible to framing effects than younger adults. The students could examine the data for this effect if their sample size is large enough.

Sample questions:
(Examples from Cacioppo & Freberg, 2013)
Availability heuristic
Which is more common, being killed by a shark or by falling airplane parts?

Representativeness heuristic
Thomas is short, slim, and loves poetry. Which of the following is most likely to be Thomas' occupation?

- Truck driver
- Professor of Greek and Classics

Follow-up and Discussion:

- *Have students discuss their overall findings and why they were consistent with (or not consistent with) research data on these phenomena.*
- Ask students to describe how their understanding of cognitive biases has changed now that they have hands-on experience asking people about them.
- Have students identify limitations with this exercise (e.g. sampling issues), and how it could be modified.

Section 2: Crosscutting Concepts

Select at Least One

- Select one or more of the following cross-cutting concepts central to the phenomena that students will investigate:
    - What *patterns* underlie responses to the questions? Are there *patterns* in cognitive processes that help explain biases?

    - *Stability and Change:* what factors might influence susceptibility to cognitive errors (e.g. experience, age, mental processing)?

- Describe how the cross-cutting concept(s) will factor into the lab.
    - Students will be discussing these concepts when summarizing and analyzing the data.

Section 3: Lab Report (written, verbal, or recorded)

Suggested Content to be Included in Student Report:

The sections below could be included in a written report of this lab, depending on the teacher's specific goal for this activity. See above for more details.

- Background information
- Objectives
- Questions and hypothesis
- Materials used (include measurements, where necessary)
- Procedure described in detail (for replication)
- Graphs/tables of collected data
- Findings
    - Was hypothesis supported or not supported? Explain.
        - If inferential statistics are not calculated, students could discuss whether the data are consistent with findings in the research literature.
    - What do the findings mean? (use appropriate terminology related to concept)
    - How could the research be improved, if replicated?

References:

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This lab originally appeared in:

Miller, R. L. (Ed.). (2018). *Promoting psychological science: A Compendium of laboratory exercises for teachers of high school psychology.* Retrieved from the Society for the Teaching of Psychology web site: http://teachpsych.org/ebooks/index.php