

After completing this exercise, you should be able to

- define hindsight bias and overconfidence.
- use the novel context of nursery rhymes to demonstrate how hindsight bias and overconfidence operate in everyday life.
- appropriately evaluate the success of your creative enterprise.

Exercise 1.4

DESIGNING CAREFULLY CONTROLLED RESEARCH

Scientific Problem Solving

Scientific problem solving has four components:

- *Forming hypotheses*—We develop tentative predictions about the causes of behavior. Hypotheses represent an attempt to resolve a discrepancy in our formal knowledge about the causes of behavior.
- *Defining variables operationally*—We define research components in terms of operations in order to promote objectivity in observation and precision in measurement.
- *Conducting systematic or controlled investigations*—We strive to reduce cause-effect explanations to their simplest possible forms. We often emphasize experimental comparisons as a preferred method for developing the sturdiest and most truthful cause-effect explanations. We carefully use control procedures to eliminate alternative explanations for any obtained results.
- *Interpreting results statistically*—We use statistical analysis to help determine whether we have isolated the most important variables.

The following three badly designed experiments and the questions accompanying them will help you to recognize research concepts and sharpen your ability to detect flaws in experimental design. After you complete all the questions, compare your answers with those in the Answer Key at the end of the book.

The Colorful Boss

Arlene wanted to increase the productivity of the clerical staff in her plant. She thought painting their cubicles blue (her favorite color) would increase their rate of work completion but that painting the cubicles yellow (a color she thought was harsh) would have no effect or might even slow down the clerical staff's rate of completion. To test this idea she had the work cubicles in the Sales Department painted blue and those in the Public Relations Department painted yellow. Then she kept track of how many projects each department completed in the next three months. For the two-month period following the painting, the sales clerical staff dramatically outperformed the public relations clerical staff in the number of projects completed.

Research Design Elements (See Answer Key.)

What is the focal behavior of the study and how is it defined operationally? _____

What is the hypothesis? _____

What is the independent variable? _____

How is the *dependent variable* measured? _____

What variables are controlled? _____

What variables are not controlled? _____

Did the research measure what Arlene thought she measured? Justify your answer:

The Bad Driver

John is intrigued by the relationship between frustration and aggression. He proposes to study whether socioeconomic status is a factor in how drivers express aggression when they are frustrated. John decides to employ a high-status car (a shiny new Mercedes) and a low-status car (a dented, rusty 1983 Volkswagen) as the stimuli in a "field" experiment on the roads near his home during a sunny April afternoon. He plans to drive the high-status car from 1 to 3 P.M. and the low-status car from 3 to 5 P.M. During these periods, he will linger when he has to stop for red lights and will move forward only when the driver behind him honks. His research assistant, riding on the passenger side, will time how long it takes the driver of the car behind the experimental car to honk. John believes drivers will take longer to honk when they are behind the Mercedes than when they are behind the Volkswagen. He thinks frustrated people will suppress their frustration and aggression when the person causing the frustration is of high socioeconomic status.

Research Design Elements (See Answer Key.)

What is the *focal behavior* of the study and how is it *defined operationally*? _____

What is the *hypothesis*? _____

What is the *independent variable*? _____

How is the *dependent variable* measured? _____

What variables are controlled? _____

What variables are not controlled? _____

How can the experiment be improved? _____

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* Noted chemist Brent H. Belvin has invented "The Pleasure Pill" which he claims is guaranteed to cut your bad-cholesterol levels in half. Design an experiment that tests the claim he makes about his pill. Your written description of this experiment must contain the following terms from Chapter 1 of Myers:

experimental condition

control condition

random assignment

independent variable

dependent variable

double-blind procedure

placebo