Overview (or Homer’s Handy-Dandy Guide to the Scientific Method)

Hypothesize
Operationalize
Measure
Evaluate
Revise/Replicate

I. Hypothesize

A. Theory – an organized set of principles used to explain observed phenomena

B. Hypothesis – an explicit, testable prediction about the conditions under which an event will occur

II. Operationalize

A. Conceptual definition – general, abstract definition of a variable

B. Operational definition – specific description of a variable that allows it to be measured and/or manipulated
III. Measure
   A. Descriptive research

       1. Random sampling – everyone in the population of interest has an equal chance of being in the study

   B. Correlational research

       1. Correlation coefficient – statistical measure used to determine the strength and direction of the association between 2 variables

   C. Experimental research

       1. Independent variable (IV) – variable that is manipulated to determine whether it affects the dependent variable

       2. Dependent variable (DV) – variable that is measured to determine whether it is affected by the independent variable
3. Random assignment - process of assigning participants to the conditions of an experiment such that all people have the same chance of being in a given condition

IV. Evaluate

A. Internal Validity - degree to which you are certain that the independent variable caused the changes in the dependent variable

B. External Validity - degree to which you are certain that the results of a study would be obtained for other people and in other situations (degree to which you can generalize your results to other populations)

V. Revise/Replicate