



Intro to Stats

Methods Overview

The goals of science

- Description: What happens?
- Prediction: When does it happen?
- Explanation: Why does it happen?
 - Theory
 - Causal Inferences
- Intervention/Application: What could be done to help?
- These all build on each other

Self Report

- ▶ Self-report methods: ask participants to tell you
 - Interviews
 - Questionnaires
 - Daily diary methods

Fixed response scale

Open-ended question

Observational Data

- ▶ Observational Data
 - Observations in natural settings
 - Laboratory-based observation

1. Archival Research

- ▶ Researchers examine existing data that may or may not have been intended for research
- ▶ Harker and Keltner (2001) used yearbook pictures to predict marital outcomes 30 years later

2. Correlational Research

- ▶ Assess the naturally occurring associations among two variables
 - Positive correlation
 - rewards are positively associated with satisfaction
 - Negative correlation
 - conflicts are negatively associated with satisfaction

Correlation does not imply causation!

- ▶ Three possible interpretations of any correlation
 - X may cause Y
 - Y may cause X
 - Both X and Y may be the result of some other cause

3. Longitudinal Research

- ▶ Data collected at 2 or more time points
- ▶ Associations among variables across time

4. Experimental Research

- ▶ Manipulate one variable to see if it causes changes in another variable.

$$A \rightarrow B$$

- ▶ Does arousal lead to greater liking?

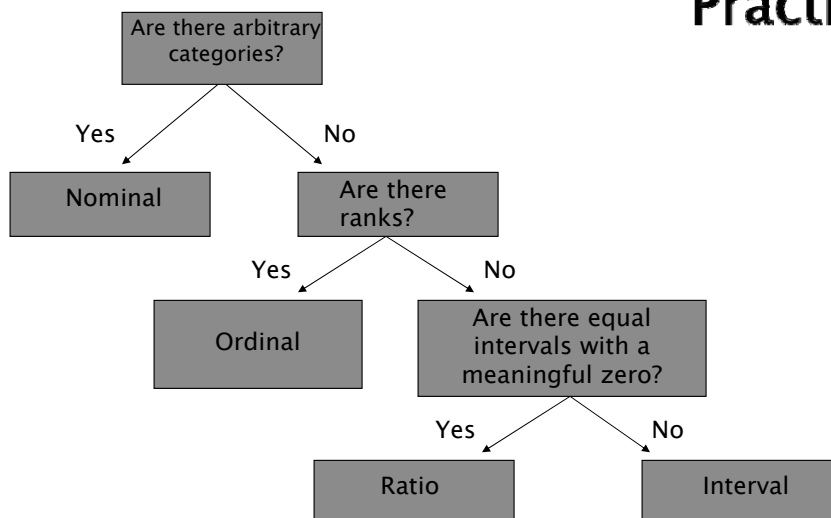
Testing the WHATs and WHYs

- ▶ 1:1 correspondence
 - If you pour x into y, you know x caused the explosion
 - If you pour x and z into y, you don't know what caused the explosion
- ▶ Random Assignment
 - In large enough samples, characteristics will be equally distributed

4 scales of measurement

- ▶ Scale determines what analyses you can run
- ▶ Nominal
 - Categories (gender, race)
- ▶ Ordinal
 - Ranks (small, medium, large; freshman, sophomore, junior, senior)
- ▶ Interval
 - Ordered with equal intervals, no zero (survey item)
- ▶ Ratio
 - Ordered, equal intervals, zero (time; Kelvin temp)

Practice



Reflecting on Scales

- ▶ Any outcome can be assigned as one type of scale
- ▶ Nominal is least precise, ratio most precise
- ▶ The more precise, the more informative your data will be
- ▶ More precise scales include all qualities of the scales below them

Continuous vs. Categorical

- ▶ Categorical: scale is best conceptualized as a series of categories (nominal, ordinal)
 - Gender
 - Class rank
- ▶ Continuous: scale is best conceptualized as points on a continuum where it makes sense for someone to be partway between 2 scale points (interval, ratio)
 - Age
 - Happiness on a 7-pt scale