Lecture 1
Segment 2

Observational studies

Observational studies

- Important concepts
  - Study vs. experiment
  - Patterns of correlations
  - Quasi-independent variables

Examples

- Intelligence testing
- The effects of concussion

Intelligence testing

- Intelligence testing
  - Standardized intelligence tests hit US children around the same time and at even stronger rates than polio

Intelligence testing

- Intelligence testing
  - By 1952 several models of intelligence had been proposed

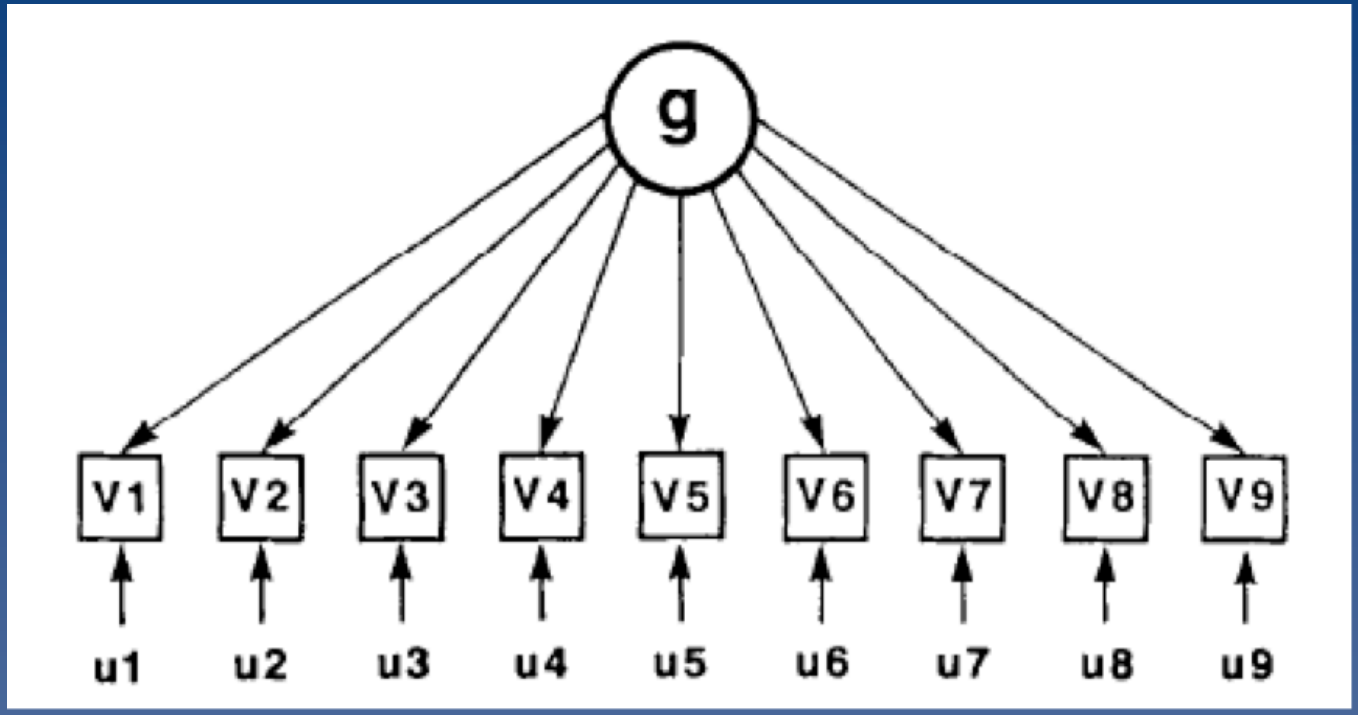
Intelligence testing

- Intelligence testing
  - Unlike polio, standardized testing has not been eradicated and to this day no one can agree on what intelligence really means

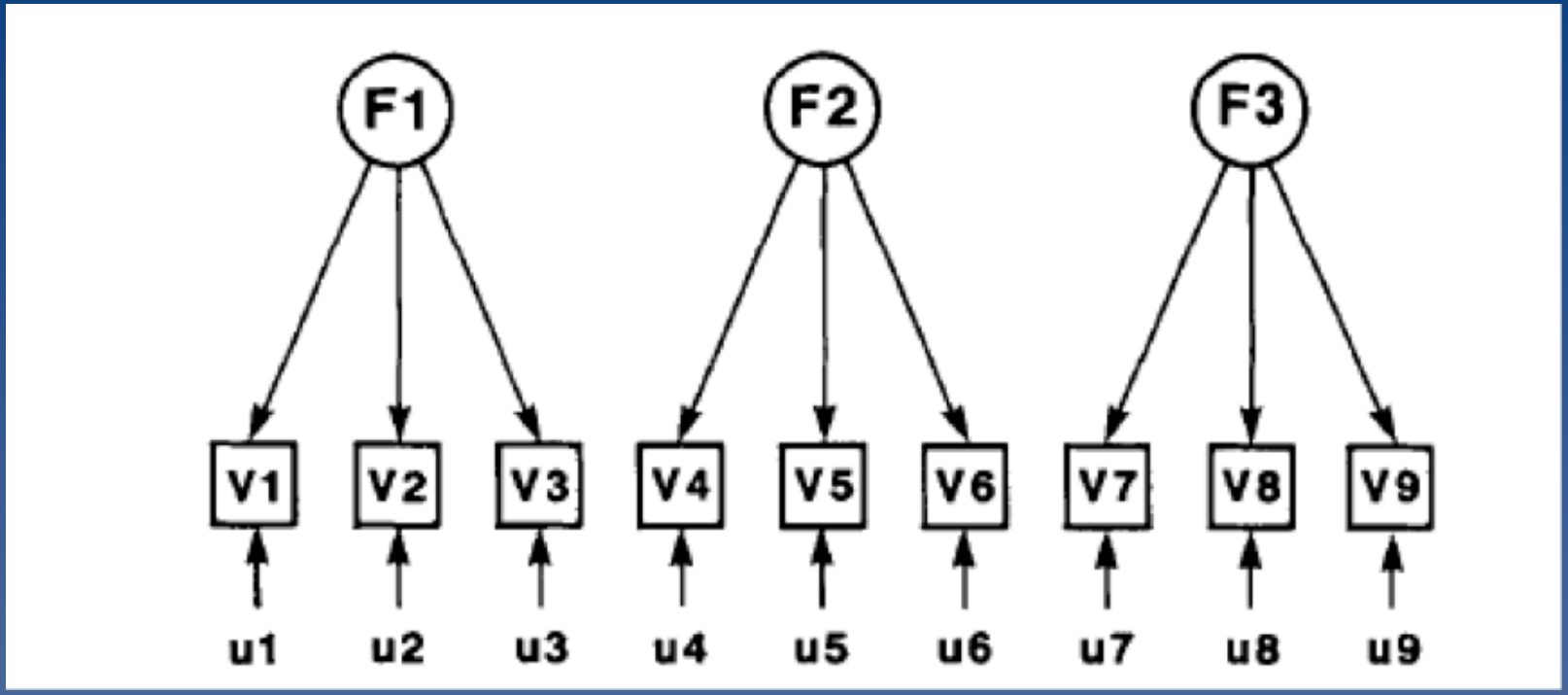
Intelligence testing

- Models of intelligence have been proposed by detailed analysis of patterns of correlations across different types of tests
- I refer to these as “studies” of intelligence rather than “experiments” because no variable is manipulated

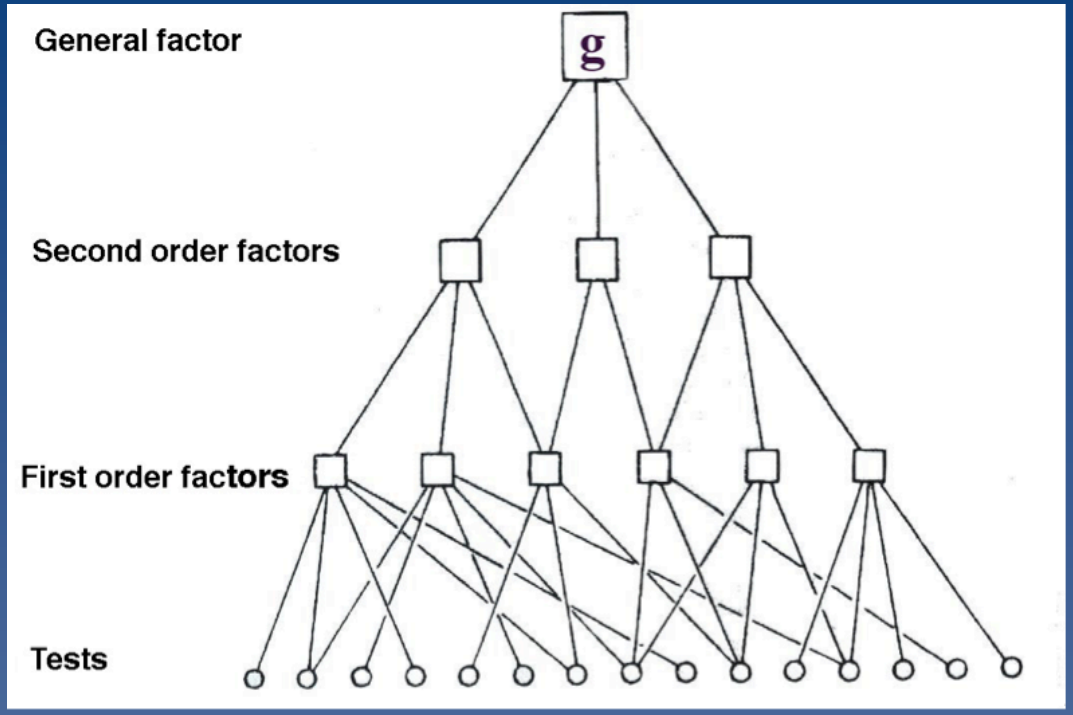
Models of intelligence



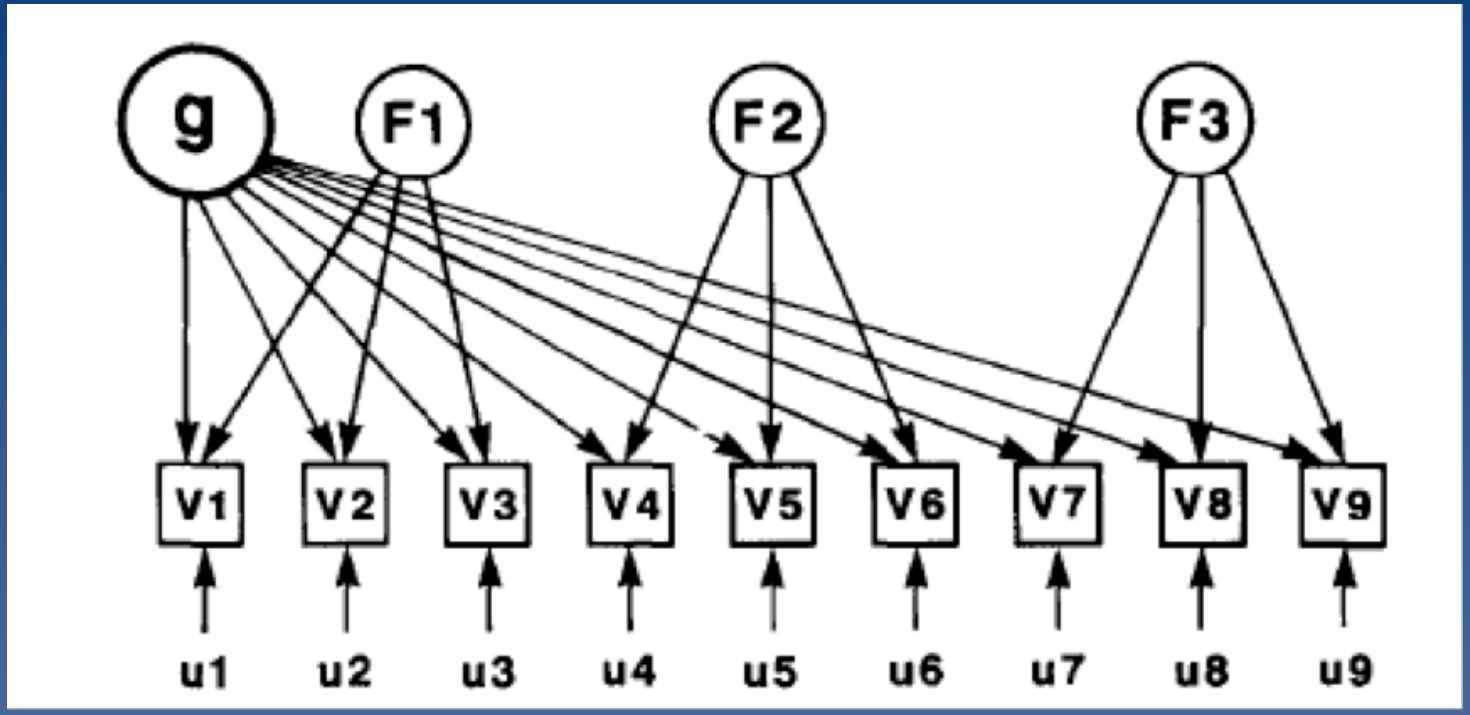
Models of intelligence



Models of intelligence



Models of intelligence



Intelligence testing

- Observational studies like these are useful but they are not as powerful as randomized experiments
  - Arguments about causality

Effects of concussion

- Sports-related concussions, especially in American football, are common and may cause neural damage and cognitive deficits

Effects of concussion

- Quasi-independent variable
  - Treatment
    - Suffered a sports-related concussion
    - Control group
- Dependent variable
  - Neural measures
  - Cognitive measures

Effects of concussion

- Confounds?
  - Prior concussions
  - Prior hits to the head (not necessarily concussions)
  - Personality types more likely to be aggressive

Effects of concussion

- Quasi-independent variable
  - Since the IV does not involve random and representative sampling, arguments about causality are not as strong

Observational studies

- Important concepts
  - Study vs. experiment
  - Patterns of correlations
  - Quasi-independent variables

Images in slides 8 - 11 are from Jensen, A. R. & Weng, L. (1994). What is a good g? *Intelligence*, 18, 231-258.