

Basics of research design

- Research begins with an issue
- Then an empirical question
- Then a hypothesis
 - conjecture regarding the relationship between variables that can be tested empirically
 - Proposes specific relationship (if –then)

What are variables?

- Measurable quantities that vary depending on other circumstances.
 - Ex: temperature
 - Ex: accuracy on speech perception in noise test.

Independent variables vs. dependent variables

- IVs
- DV
- The idea of research is to see whether the DV varies as a function of the IV.

Experimental vs. Descriptive Research

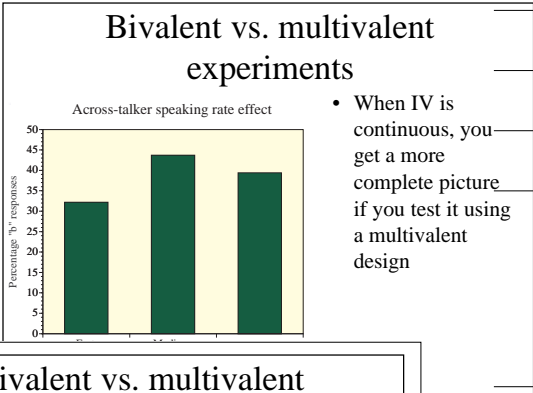
- Experimental research:
- Descriptive research
- Mixed design

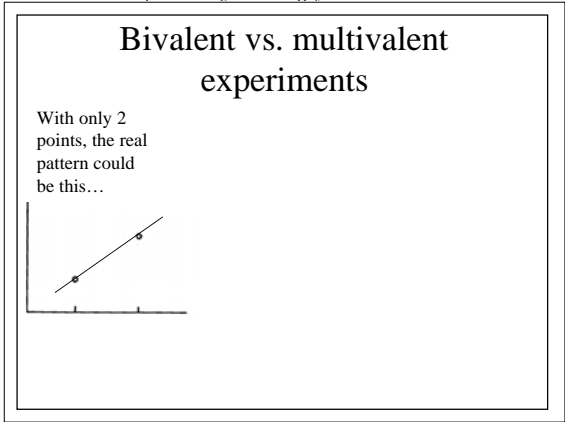
Experimental Research

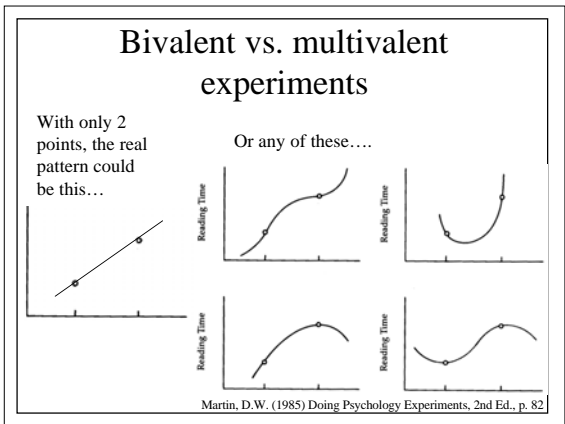
- Experimenter has a theory that some IV influences some DV
- To test theory, the experimenter alters IV and sees whether this does influence DV
- Main concern: when IV changed, need to ensure nothing else changed at the same time
- A large part of experimental design is focused on controlling these outside variables

Types of Experimental Research

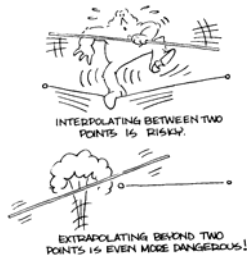
- Bivalent experiment
- Multivalent experiment
- Bivalent makes sense when there really are two categories that you want to compare.
- But if there are a range of levels of IV, breaking that down into 2 discontinuous groups can mask the underlying pattern







Bivalent vs. multivalent experiments



Martin, D.W. (1985) Doing Psychology Experiments, 2nd Ed., p. 83

Descriptive research

- In descriptive research, the experimenter isn't manipulating the situation, but is instead comparing the effect of differences that already exist.
 - Comparative research
 - Developmental research

Longitudinal vs. Cross-sectional

- | Longitudinal | Cross-sectional |
|--|--|
| <ul style="list-style-type: none">• Better control for other differences between groups• Slower to run• More subject loss (attrition)• Order effects<ul style="list-style-type: none">– If subjects can learn from having been in the experiment, older kids will always have more of this experience than younger kids | <ul style="list-style-type: none">• Groups may differ on other factors besides age• Faster to run• Attrition not a factor• All of the subjects are naïve<ul style="list-style-type: none">– No concern that having taken part in the study at one age might change what the person would do at a later age. |

Types of descriptive research

- Comparative
- Developmental
- Correlational

Example: Correlational vs. Comparative

- Issue: do different personality types differ in their use of hand gestures while communicating?
- Used a personality survey that measured the extent to which people were extroverted or introverted
- Videotaped a conversation with each participant, and counted the number of hand gestures they made.
- One possibility: classify people as either introverted or extroverted, and compare the two groups.
- Other possibility: use their scores along the continuum of extrovert-to-introvert and see if this correlates with hand gestures.

Advantages/disadvantages

- Comparative study assumes everyone is either one or the other; Correlation takes into consideration the degree to which people are one vs. the other.
- Unequal N's can be a problem for comparative.
- Square of correlation tells you how much variation in hand gestures is accounted for by extroversion.
- A skewed population can result in a strong correlation because of the extreme participants.
- If you have a restricted range, correlation won't show much.

Types of descriptive research

- Comparative
- Developmental
- Correlational
- Survey

Advantages of survey research

- Easy to test
- Easy to score
- Can test large numbers of people
- If the survey is well-standardized, you have a good sense of what patterns of responses are normal/typical

Disadvantages of survey research

- Explicit questions only work on certain issues
- People may not return self-administered surveys; those that do return them may not be representative
- If the experimenter is giving the survey/interview, people feel social pressure to respond in a certain way
- If a question is ambiguous, people may respond to it in different ways, and you won't know
- If the response format annoys people they are less likely to respond
- Format issues

Sample study 1

- What factors influence word-finding failures in both normal children and children with w-f disorders?
- Two possible factors: word frequency, and confusability/similarity to other words.
- Tests children on how well they come up with the names for these different types of words.

Sample study 2

- Do people who get CIs feel self-conscious about them?

Sample study 3

- When do children start using the past-tense ending correctly?
- Uses word-completion tasks, like “Joey like to skip; he skips every day. Yesterday he _____.”

Sample study 4

- Do people who see student clinicians feel more or less satisfied than those who see professional clinicians?

Sample study 5

- What is the relationship between amount of hearing loss and extent of hearing handicap?
