

EXPERIMENTAL DESIGN

Assignment

Beins, Chapter 6, Chapter 7, pps 171-182

Terms you should know.

True Experiment

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Independent Variable

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Task (Variable) Manipulation

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Instructional (Variable)
Manipulation

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Situational (Variable)
Manipulation

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Manipulation Checking

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Dependant Variable

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Control Condition

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Between Subject Designs

Randomized, Posttest only,
Control Group Design

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Randomized, Pretest-Posttest,
Control Group Design

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Simple Subject Assignment
Strategies

Simple Random Assignment

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Matched Random Assignment

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Natural Pairs

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Within Subject Designs

Simple Repeated Measures

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Counterbalancing

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Partial Counterbalancing

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Randomized Blocks

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Order Effects

Practice (Transfer) Effect

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Fatigue Effect

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Carry-Over Effect

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Sensitization Effect

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Adaptation Effect

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Factorial Designs

Factors

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Main Effect

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Interaction

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Concepts You Should Master.

1. How does the concept of validity apply to the manipulation of the independent variable?
2. How does the concept of reliability apply to the manipulation of the independent variable?
3. How does the concept of demand characteristic relate to the placebo effect?
4. How might the concept of sampling apply to the choice of levels of an independent variable?
5. What are the benefits of using multiple stimuli to operationally define the independent variable? How **might** multiple stimuli offset the possibility of stimulus confounding?
6. How might an extraneous variable confound an experiment?

c. Pam D. Monium got a contract to study the influence of sound on motor skills of people assembling computers. Pam had a group of volunteers to listen to three five minute music excerpts in this order: punk rock, elevator music, and classical music. After listening to the music the participant was asked to assemble a dummy computer. Pam measured both the assembly time and the number of mistakes. Pam found that the number of mistakes and assembly time was significantly lower after people heard the classical music.

i. Design

ii. Evaluation

iii. Recommendations for strengthening

13. Frank N. Stein has come to you with an idea for evaluating the 'fright factor' in Halloween masks. Stein's idea is that people are more shocked by mutilated or deformed human-looking faces than they are by bizarre non-human faces. He has designed a study in which subjects are seated in a small darkened room facing a window. At five second intervals a person wearing one of three masks is illuminated on the other side of the window. The masks, illuminated in the following order, are: Snow White, a maimed human face with maggots wiggling from the nose and blood dripping from one empty eye socket, and the alien from E.T. The dependent variable is the person's heart rate as measured by an electronic heart monitor placed on the subject's chest.

What recommendations do you have for improving this study?

"You have no control group." Our student turns pale and says, "You don't mean..."
"Yes" she said, "I'm afraid so. You left no tern unstoned."

Application

1. The following questions refer to Morris & Sarll's article *Drinking Glucose Improves Listening Span in Students Who Miss Breakfast*. (Patten Article 16)
 - a. Introduction.
 - i. What is the major research question being studied here?
 - ii. What is the research hypothesis? Is this a directional or non-directional hypothesis?
 - b. Method.
 - i. What kind of design is this?
 - ii. Is this a field or laboratory study?
 - iii. How was the independent variable manipulated?
 - iv. What was the dependent variable?
 - v. Why were all participants led to believe that they might have to give blood samples?
 - vi. Why do you think that the *Listening Span Test* was administered via tape recorder?
 - vii. What did the authors do to ensure that the participants attended to the sentences in the *Listening Span Test*?
 - c. Results.
 - i. What were the major findings?
 - d. Discussion
 - i. How did the authors interpret the results?
 - ii. On the basis of this article, would you recommend that students eat Life Savers while studying/cramming for a test?

2. The following questions related to Fitzgerald, Jordan, & Hart's article *Preliminary Evaluation of an Abstinence-Based Program for 7th-Grade Students from a Small Rural School District* (Patten Article 21).
 - a. What is/are the research hypothesis/hypotheses?
 - b. Method.
 - i. What kind of study is this?
 - ii. Was this a field or laboratory study?
 - iii. What was the independent variable?
 - iv. What was the dependent variable?
 - v. The authors call this a 'pre-experimental design'.
 - (1) What kind of design did they use?
 - (2) What was missing that kept this from being a true experimental design?
 - (3) How might this missing element affect the conclusions that could be made?
 - c. Results.
 - i. What statistical analysis was used to assess the second hypothesis? What was the conclusion?

d. Conclusions.

i. Comment on the internal validity of this study.

ii. Comment on the external validity of this study.

iii. How would you redesign this study?