

Psychology 2300

Chapter 10: More on Experiments

- Pre/Post-Tests
 - One group of participants
 - Measures dependent variable before and after treatment
 - May lack control of other variables that can produce confounds
- Threats to Internal Validity
 - History: event confounded with treatment
 - Example - treatment for managing money during a recession
 - Maturation (growth): natural changes in participants/society over time
 - Longitudinal and successive independent samples
 - Testing threat: taking pretest affects post-test
 - Regression: extreme scores on pretest are less extreme on post-test
 - Example - foreign language placement test
 - Attrition: people drop out of the study (same as subject loss)
 - Instrumentation: changes in the instruments over time
 - Example - DSM criteria (in 5th edition)
 - Contamination: the treatment group members talk to the control group members, so even the control group can practice on themselves (diffusion of treatment)
 - Demand Characteristics: when participants are aware of what the researcher expects to find, which may cause them to alter their behavior to conform to expectations
 - Can be prevented by using a double-blind study
 - Observer bias: occurs when the observer knows the goals of the study and allows it to influence their observations
 - Placebo effect: a positive effect in a patient following a treatment which arises from the patient's expectations rather than the treatment itself
- Definition of Quasi-Experiment
 - Includes an intervention or treatment
 - Includes measures of the dependent variable taken after (and in some cases before) the treatment
 - Lacks random assignment to conditions, but may include a comparison group
 - May lack control of other variables that can produce confounds
- The Logic of Quasi-Experiments
 - "Don't let the perfect drive out the good"
 - It's better to do the study and recognize the flaws than to not do the study
 - Need group to serve as comparison group
- Quasi-Experimental Design Categorization
 - 0 = measures of dependent variable before (pretest) and/or after (post-test) the treatment

- X = treatment (applied by researcher, another agent, or naturally occurring)
 - When O's and X's are on 2 or more lines and separated by dashes = multiple groups with no random assignment
 - Read left to right
- One-Group Pretest/Post-Test Design
- $\left(\begin{array}{c} O_1 \ X \ O_2 \end{array} \right)$
 - A good example would be people attending a Weight Watchers support group (weigh them before and after a 10 week support group)
- Nonequivalent Control Group Designs
- Nonequivalent control group WITHOUT a pretest
 - $\left(\begin{array}{c} X \ O \\ \hline O \end{array} \right)$
 - Nonequivalent control group WITH pretest
 - $\left(\begin{array}{c} O_1 \ X \ O_2 \\ \hline O_1 \ O_2 \end{array} \right)$
- Interrupted Time-Series Designs: any design with multiple measures of the dependent variable taken over time, before and after treatment
- Basic design
 - $\left(\begin{array}{c} O_1 O_2 O_3 O_4 O_5 O_6 O_7 \ X \ O_8 O_9 O_{10} O_{11} O_{12} O_{13} O_{14} \end{array} \right)$
 - Often uses archival measures, due to number of data points needed over time
 - Archival data: data that's already been collected
 - Look for abrupt changes (aka discontinuities) from immediately before to immediately after the treatment
 - Threats to internal validity
 - History is a major threat (did anything else happen around the same time?)
 - A series of pre and post measures controls the threats of maturation, testing threat, and regression
- Interrupted Time-Series With Nonequivalent Control Group Design: a combination of the two major designs
- Basic design
 - $\left(\begin{array}{c} O_1 O_2 O_3 O_4 O_5 O_6 O_7 \ X \ O_8 O_9 O_{10} O_{11} O_{12} O_{13} O_{14} \\ \hline O_1 O_2 O_3 O_4 O_5 O_6 O_7 \quad O_8 O_9 O_{10} O_{11} O_{12} O_{13} O_{14} \end{array} \right)$
 - Helps to deal with threat of history, in that an event that affects both groups cannot be responsible for treatment effects