Post-lecture Notes IV.3 – Non-Equivalent-Groups Designs

Study Questions

What is the key difference between a non-equivalent-groups design and a regular between-subjects design?

What kind(s) of group-based confounds can covariates remove and what kind(s) can they not help with?

Why are non-equivalent-group designs more susceptible to the kind(s) of confound that covariates can't help remove?

What addition should be made to a non-equivalent-groups experiment to deal with the kind(s) of confounds that covariates can't help remove?

1. When a non-equivalent-groups design is used to compare two conditions or treatments _____ .
    (A) subjects are independently assigned to conditions
    (B) subjects are first assigned to a group, then groups are assigned to conditions
    (C) groups are assigned to conditions, then subjects are assigned to groups
    (D) pre-existing groups are assigned to conditions

Answers to Study Questions

In a regular between-subjects design, people are individually (and randomly) assigned to conditions. In a non-equivalent-groups design, pre-existing groups of people are (randomly) assigned to conditions, instead.

Covariates are great at removing any differences between groups that exist at the *beginning* of the experiment. Therefore, pre-existing differences between the groups can be dealt with by adding one or more covariates. What covariates can't help with are differences between the groups that arise *during* the experiment. Anything that occurs after the covariate measure was taken can't be dealt with using the covariate. (Covariates can't see into the future!) Therefore, for example, they can't help with standard experimenter bias and they can't help remove the effects of any (other) external event that affects one group and not the other.

By definition, non-equivalent-group designs assign pre-existing groups to conditions (instead of assigning individual subjects to conditions, which is how between-subject designs are usually run; see first question). These pre-existing groups not only often differ from each other on average at the start of the experiment (which is why covariates should be included), but they are often physically separate, so they experience difference external events during the experiment, as well. For example, if one class at one elementary school gets the treatment and one class at a different elementary school is the control, then any event that occurs at one school and not the other will be a confound that covariates can't help you remove.

The best way to deal with confounds (with group/condition) that arise during the experiment is to include one or more control measures. The trick to these measures is that they need to be different enough from the main measure to not pick up on what you are trying to influence with your manipulation while still be similar enough to pick up on the kinds of confounds that might also influence what you are studying. For example, if you are conducting a field efficacy test of a new program to reduce binge drinking, you need to use something like smoking; this is different from drinking in that a program aimed specifically at drinking might not alter smoking, but it is similar enough in that any external event that makes everyone more health-conscious (and, therefore, could influence drinking) would be picked up by a measure of smoking.

1. When a non-equivalent-groups design is used to compare two conditions or treatments (D) pre-existing groups are assigned to conditions.