Post-lecture Notes III.5 – Quasi-Experiments

Study Questions

What is the definition of a quasi-experiment? What do quasi-experiments have in common with "real" experiments and how do they differ?

What are the two ways to run a quasi-experiment (in terms of sampling)? Which is preferred (under what conditions)?

Why, in general, are quasi-experiments not threatened by the directionality problem?

Why, in general, are quasi-experiment not threatened (any more than "real" experiments) by the third-variable problem?

Why is it **not** OK to divide your subjects in term of high vs low depression and look for a quasi-experimental effect on anxiety?

Why is it **not** OK to divide your subjects in term of good vs bad previous-night-of-sleep and look for a quasi-experimental effect on current mood?

1. An *ex-post-facto* quasi-experiment is _____ .
    (A) when you mail the survey to the subjects from the post office
    (B) when you take one sample and divide the subjects into groups later
    (C) when you take separate samples within each of the groups
    (D) when you force the group sizes to be unequal

2. In general, in order to be treated as a quasi experiment, _____ .
    (A) one variable must be much more stable than the other
    (B) one variable must be at least a little bit more stable than the other
    (C) the two variables should be about equal in stability
    (D) both variables must be highly labile

Answers to Study Questions

A quasi-experiment is a correlational study with one variable being a very stable "subject" variable, such as handedness, and the other variable being a labile "data" variable, such as response time. Quasi-experiments are like experiments in two ways: in both cases, you have a labile measure providing the data and, in both cases, you have another variable that you think of as a potential cause of the data variable. (Note: in most cases, the SV in a quasi-experiment is qualitative, just like the IV in most experiments is often qualitative, but this doesn't have to be true in all situations, so I wouldn't really include it here.) Quasi-experiments differ from "real" experiments in that the researcher doesn't have complete control over the potential-cause variable and, therefore, did not manipulate it.

There are planned quasi-experiments, where you sample equal numbers of people within each level of the subject variable, and there are ex-post-facto quasi-experiments, where you just take one big sample and split the people into groups after-the-fact. The former is preferred, in general, because it always has equal-sized groups, so it has the best statistics for a given total number of people. But it's only worth the extra effort when the population isn't close to evenly split between levels of the subject variable of interest. Examples: don't bother with planning if you're studying males vs females, since it will split roughly evenly on its own; definitely used a planned quasi- if you're studying handedness, since left-handers are much less frequent than right-handers.

Like "real" experiments, most quasi-experiments are not open to reversed-causation explanations because (a) the subject variable was caused a long time ago and causation can't go backwards in time, (b) it's very hard for a variable to be more stable than its causes, and (c) most subject variables are random and permanent, so they aren't really "caused" by anything.

Like "real" experiments, the interpretation (and internal validity) of all quasi-experiments can be threatened by confounds. On the surface, it might appear that quasi-experiments are in serious trouble because no attempt was made to create equivalent groups. But when you think about it in terms of causation, instead of just confounding, you often find that all of the third variables that could be the real cause of both the subject variable and the data variable are actually aspects of the subject variable, itself. So, while these are technically confounds and, therefore, threats to internal validity, they don't offer a theoretically distinct interpretation of the results, so they are often mostly ignored. For example: being first born is confounded with having no older siblings. But that's really two ways of saying the same thing, so it doesn't really cause any problems for interpretation. On the other hand, being first born is correlated with having younger parents. This is a serious problem because that is a different construct.

Depression is no more stable than anxiety. The reversed-causation explanation is as plausible as what you seem to be interested in.

Even though the previous' night sleep occurred before the current mood (so reversed causation is not plausible), there are too many third variables that could cause both to make this a candidate for quasi-experimental analysis (examples: previous-day's-events, including previous-day's meals and exercise, will affect both last-night's sleep and current mood).

1: B: An *ex-post-facto* quasi-experiment is when you take one sample and divide the subjects into groups later ("*ex-post-facto*" translates to "after-the-fact"); taking separate samples is a *planned* quasi-. 2: A: In general, in order to be treated as a quasi-experiment, one variable must be much more stable than the other; this is an absolute requirement; one variable needs to be a stable SV and the other must be labile.