2.1: Between-Subjects Design

Between-Subjects Design

One way to differentiate different research designs is based on how many treatment(s) or condition(s) a participant receives. In a **between-subjects design**, each participant is tested in only one condition. When each participant is tested in more than one treatment or condition, it is considered a different type of research design, within-subjects design, which we will look at later on. Going back to between-subjects design, as an example, a researcher with a sample of 100 university students might assign half of them to write about a traumatic event and the other half write about a neutral event. Or a researcher with a sample of 60 people with severe agoraphobia (fear of open spaces) might assign 20 of them to receive each of three different treatments for that disorder. In both examples, there is only one independent variable, or a single factor. These are called **between-subjects single factor design**.

Random Assignment

Like as we have seen earlier, the primary way that researchers control for extraneous variables across conditions is called **random assignment** , which means using a random process to decide which participants are tested in which conditions. Do not confuse random assignment with random sampling. Random sampling is a method for selecting a sample from a population. Random assignment is a method for assigning participants in a sample to the different conditions, and it is an important element of all experimental research.

In its strictest sense, random assignment should meet two criteria. One is that each participant has an equal chance of being assigned to each condition (e.g., a 50% chance of being assigned to each of two conditions). The second is that each participant is assigned to a condition independently of other participants. Thus one way to assign participants to two conditions would be to flip a coin for each one. If the coin lands heads, the participant is assigned to Condition A, and if it lands tails, the participant is assigned to Condition B. For three conditions, one could use a computer to generate a random integer from 1 to 3 for each participant. If the integer is 1, the participant is assigned to Condition A; if it is 2, the participant is assigned to Condition B; and if it is 3, the participant is assigned to Condition C. In practice, a full sequence of conditions—one for each participant expected to be in the experiment—is usually created ahead of time, and each new participant is assigned to the next condition in the sequence as they are tested. When the procedure is computerized, the computer program often handles the random assignment.

Random assignment is not guaranteed to control all extraneous variables across conditions. The process is random, so it is always possible that just by chance, the participants in one condition might turn out to be substantially older, less tired, more motivated, or less depressed on average than the participants in another condition. However, there are some reasons that this possibility is not a major concern. One is that random assignment works much better than one might expect, especially for large samples. Another reason is that even if random assignment does result in a confounding variable and therefore produces misleading results, this confound is likely to be detected when the experiment is replicated. The upshot is that random assignment to conditions—although not infallible in terms of controlling extraneous variables—is always considered a strength of a research design.
