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Experimental and Quasi-Experimental Designs for Research
by Donald T. Campbell and Julian C. Stanley, pp.13-34

Abstract

The designs described in this section of the book are true experimental designs which allow for the manipulation of a study's independent variable and the measurement of any impact on the dependent variable. The key is that the experimenter has full control over the independent variable. These are the most strongly recommended designs. They generally have high internal validity and their weakness is external validity.

Summary

Three designs are proposed and explained. The first, (design 4), is shown below:

$$R \ O_1 \quad X \quad O_2$$
$$R \ O_3 \qquad O_4$$

This design is the most common of the three. It has good internal validity. It controls for history (not intrasession, solution for this is to run simultaneously). Maturation and selection should be equal in each group. The problem of instrumentation is handled by using a fixed test. If observers are used, the same ones should be used for both experimental and control sessions and they shouldn't be told which is which. Regression should affect both groups equally. Selection effects are generally ruled out by randomization, matching is no substitute for a randomization.

External validity of this design is weak. First there can be interaction effects involving X and another variable. Ex: effect may be specific to groups warmed up by the pretest. This is not really solvable, Interaction of selection and X, and Maturation can both be problems. These are reduced by extending the boundaries in terms of settings and times. The artificiality of the experimental setting (reactive arrangements) are also