Compared to What?
Using One-Group Pre-Post Designs

Measuring outcomes for the population affected by your project is important, but measuring outcomes in isolation does not tell the full story. You need to consider how the outcomes may have been different if your project had not been implemented. That is, you need to know, "compared to what?" This brief focuses on using one-group pre-post designs and represents the second brief in a five-part series, "Compared to What? Identifying Good Comparison Data to Assess Project Results."

Using a pre-post design will provide stronger evidence of your project's effectiveness than a post-test alone. In general, pre-post designs refer to evaluation or research designs in which participants complete some type of assessment before the project is implemented and afterwards. Measures can include knowledge assessments, observations, and surveys. Typically, the same measures (or a different version of the same assessment) are used for the pre-test and the post-test, and changes in scores from pre-test to post-test are interpreted to reflect the effectiveness of the project. The pre-test is important because it provides necessary information about where participants started, enabling you to examine how participant performance changed as a result of your project.

INTERNAL VALIDITY

Internal validity assesses whether the results of an intervention are due only to the variable being studied or if other factors might have influenced the outcomes. In the context of pre-post designs, internal validity refers to the extent to which any changes seen from the pre- to post-tests are likely attributable to your project. Specific threats to internal validity include maturation (changes that occur naturally over time as a result of participants' experience), testing effects, participant history, and events that may or may not be known that occur between the pre- and post-test.

There are several types of pre-post designs, all of which provide stronger evidence of your project's contributions than a post-only design. And while a one-group pre-post design is less rigorous than some other pre-post designs, it does not require complex statistics. In the one-group pre-post design, the group participating in your project (or the group expected to be affected by your project) is measured before the project is implemented and then afterwards, so there is a point of comparison that allows you to assess changes (such as changes in knowledge or behavior). This design is preferable to and more rigorous than a post-test-only design because, with information about the starting point, you can identify changes that occurred and attribute them to your treatment with greater validity. However, if you are using a one-group pre-post design and you see changes from pre- to post-test, there may be other reasons for the changes.

One way to improve a one-group pre-post design is to add a nonequivalent dependent variable. This means that, in addition to your pre- and post-test, you could measure the change in a similar variable relevant to your population that you would not expect to change as a result of your project. For example, if students' math scores rose at the same rate as reading scores, when your project intervention was focused solely on reading, something other than your project, such as maturation or testing effects, might be causing the reading score increases. If, on the other hand, only students' reading scores increased, you could be more confident that your project intervention was the likely reason for the change in reading scores.

AN EXAMPLE OF A ONE-GROUP PRE-POST DESIGN

A Parent Training and Information (PTI) center worked throughout a state to increase its outreach to parents and families who live in rural areas. After 6 months of intensive outreach, the PTI analyzed the demographic data of families to whom they provided technical assistance and compared it to the demographic data from the previous 6 months to determine if they were reaching an increased number of families in rural areas of the state. To enhance the internal validity of its study, the PTI added a nonequivalent dependent variable by examining the change in parents and families served from other suburban and urban areas in their state. The PTI had greater confidence in the success of its outreach intervention after finding no change to the numbers of families served in other geographical areas but large increases in numbers of families served in rural areas of the state.

ADDITIONAL RESOURCES

This brief is part of a series, "Compared to What? Identifying Good Comparison Data to Assess Project Results." For additional information on evaluating special education programs more generally, you may wish to consult the **Evaluating Special Education Programs: Resource Toolkit** available on the **OSEP IDEAs That Work** website. To learn more about identifying good comparison data, you may wish to refer to the other briefs in this series: "An Overview: Identifying Good Comparison Data to Assess Project Results," "Using Nonequivalent Pre-Post Control-Group Designs," "Using Single-Case Interrupted Time Series Designs," and "Using Extant Data."

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