Encyclopedia of Research Design

Cross-Sectional Design

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Book Title: Encyclopedia of Research Design
Chapter Title: "Cross-Sectional Design"
Pub. Date: 2010
Access Date: December 8, 2015
Publishing Company: SAGE Publications, Inc.
City: Thousand Oaks
Print ISBN: 9781412961271
Online ISBN: 9781412961288

DOI: http://dx.doi.org/10.4135/9781412961288.n96
Print page: 314

The methods used to study development are as varied as the theoretical viewpoints on the process itself. In fact, often (but surely not always) the researcher's theoretical viewpoint determines the method used, and the method used usually reflects the question of interest. Age correlates with all developmental changes but poorly explains them. Nonetheless, it is often a primary variable of concern in developmental studies. Hence, the two traditional research designs, longitudinal methods, which examine one group of people (such as people born in a given year), following and reexamining them at several points in time (such as in 2000, 2005, and 2010), and cross-sectional designs, which examine more than one group of people (of different ages) at one point in time. For example, a study of depression might examine adults of varying ages (say 40, 50, and 60 years old) in 2009.

Cross-sectional studies are relatively inexpensive and quick to conduct (researchers can test many people of different ages at the same time), and they are the best way to study age *differences* (not age *changes*). On the other hand, a crosssectional study cannot provide a very rich picture of development; by definition, such a study examines one small group of individuals at only one point in time. Finally, it is difficult to compare groups with one another, because unlike a longitudinal design, participants do not act as their own controls. Cross-sectional studies are quick and relatively simple, but they do not provide much information about the ways individuals change over time.

As with longitudinal designs, cross-sectional designs result in another problem: the confounding of age with another variable—the cohort (usually thought of as year of birth). *Confounding* is the term used to describe a lack of clarity about whether one or another variable is responsible for observed results. In this case, we cannot tell whether the obtained results are due to age (reflecting changes in development) or some other variable.

Confounding refers to a situation in which the effects of two or more variables on some outcome cannot be separated. Cross-sectional studies confound the time of measurement (year of testing) and age. For example, suppose you are studying the effects of an early intervention program on later social skills. If you use a new testing tool that is very sensitive to the effects of early experience, you might find considerable differences among differently aged groups, but you will not know whether the differences are attributable to the year of birth (when some cultural influence might have been active) or to age. These two variables are confounded.

What can be done about the problem of confounding age with other variables? K. Warner Schaie first identified cohort and time of testing as factors that can help explain developmental outcomes, and he also devised methodological tools to account for and help separate the effects of age, time of testing, and cohort. According to Schaie, age differences among groups represent maturational factors, differences caused by when a group was tested (time of testing) represent environmental effects, and cohort differences represent environmental or hereditary effects or an interaction between the two. For example, Paul B. Baltes and John R. Nesselroade found that differences in the performance of adolescents of the same age on a set of personality tests were related to the year in which the adolescents were born (cohort) as well as when these characteristics were measured (time of testing).

Sequential development designs help to overcome the shortcomings of both cross-

sectional and longitudinal developmental designs, and Schaie proposed two alternative models for developmental research—the *longitudinal sequential design* and the *cross-sectional sequential design*—that avoid the confounding that results when age and other variables compete for attention. Cross-sectional sequential designs are similar to longitudinal sequential designs except that they do not repeat observations on the same people from the cohort; rather, different groups are examined from one testing time to the next. For example participants tested in 2000, 2005, and 2010 would all come from different sets of participants born in 1965. Both of these designs allow researchers to keep certain variables (such as time of testing or cohort) constant while they test the effects of others.

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http://dx.doi.org/10.4135/9781412961288.n96

See also

- Control Variables
- Crossover Design
- Independent Variable
- Longitudinal Design
- Research Hypothesis
- Research Question
- Sequential Design

Further Readings

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