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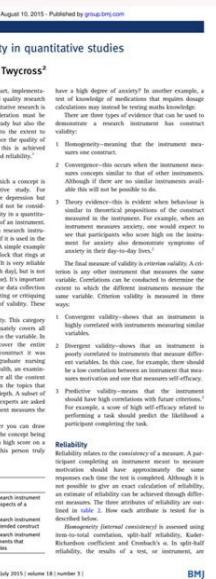
Strengths and Weaknesses of Quantitative Research

Strengths

- Testing and validating already constructed theories about how and why phenomena occur
- Testing hypotheses that are constructed before the data are collected
- Can generalize research findings when the data are based on random samples of sufficient size
- Can generalize a research finding when it has been replicated on many different populations and subpopulations
- Useful for obtaining data that allow quantitative predictions to be made
- The researcher may construct a situation that eliminates the confounding influence of many variables, allowing one to more credibly establish cause-and-effect relationships
- Data collection using some quantitative methods is relatively quick (e.g., telephone interviews)
- Provides precise, quantitative, numerical data
- Data analysis is relatively less time consuming (using statistical software)
- The research results are relatively independent of the researcher (e.g., statistical significance)
- It may have higher credibility with many people in power (e.g., administrators, politicians, people who fund programs)
- It is useful for studying large numbers of people

Weaknesses

- The researcher's categories that are used might not reflect local constituencies' understandings
- The researcher's theories that are used might not reflect local constituencies' understandings
- The researcher might miss out on phenomena occurring because of the focus on theory or hypothesis testing rather than on theory or hypothesis generation (called the *confirmation bias*)
- Knowledge produced might be too abstract and general for direct application to specific local situations, contexts, and individuals



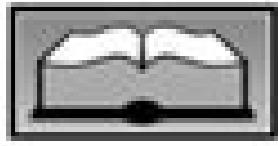
QUANTITATIVE RESEARCH DESIGNS: EXPERIMENTAL, QUASI-EXPERIMENTAL, AND DESCRIPTIVE

The process usually starts with a lot of questions. Research design is no different. The following questions address a number of key design features that must be considered:

1. **What is the research question? Will there be an intervention?** Testing the effects of an intervention is the hallmark of experimental and quasi-experimental research. If there is an intervention with human participants, the researcher will assign participants to be exposed to the independent variable, such as a modified diet or nutrient supplement, or be part of the control group. Experimental and quasi-experimental designs are used to test a hypothesis.
2. **Instead of an interview, will researchers observe study participants and take measurements?** For example, researchers might observe a group over a longer period of time to see if exposure to certain factors (such as a diet high in fruits and vegetables) affects their risk of disease. This type of design is called a cohort study design. It is commonly used in the field of epidemiology, which studies public health trends and looks at the rates of health-related states (such as disease) in different groups of people and why they occur, and then looks at how this information can be used to control health problems. Study designs used in epidemiology are discussed in Chapter 7.
3. **What are the controls?** When comparisons are going to be made between or within groups? Comparisons are needed to examine relationships between the independent and the dependent variable.
4. **When and how often will data be collected or measurements taken?** Many experimental studies measure the dependent variable at least before and after the intervention. Weight loss studies, for example, often take measurements for a year or more to see whether participants kept the weight off. Data may be collected at just one point in time, such as in a cross-sectional study, or more frequently. In a longitudinal study, participants are observed and measurements are taken over a long period of time. Longitudinal studies either go forward in time (prospective) or backward in time (retrospective).
5. **What will the setting be for the study?** The setting could be a hospital, community center, or other location.
6. **Is an intervention study with at least two groups? Will the participants be randomly assigned to a group?** True experimental research involves random assignment to groups so participants each have an equal chance of receiving any of the treatments (including no treatment) under study. Quasi-experimental research does not have randomization of participants to groups.
7. **In a human intervention study, will participants, researchers, and staff be blinded from knowing to which group a participant was assigned?** Blinding helps to prevent or minimize sources of bias, such as expectation bias. Expectation bias is when researchers' expectations of what they believe the study results should be get in the way of accurately taking measurements and reporting results.
8. **What control will be put in place to reduce the influence of extraneous variables?** Extraneous variables are factors outside of the variables being studied that might influence the outcome of a study and cause incorrect conclusions. A good quantitative design identifies and rules out as many of these competing explanations as possible.

A good research design helps you answer the research question while effectively reducing threats to design validity.

Quantitative research designs are often used to look at causal relationships, but they can also be used to look at associations or relationships between variables. Quantitative research studies can be placed into one of five categories, although some categories do vary



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An Introduction to Qualitative Research for Food and Nutrition Professionals

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ABSTRACT

The purpose of this article is to define qualitative research, explain its design, explore its congruence with quantitative research, and provide examples of its applications in dietetics. Also, methods to ensure validity, reliability, and relevance are addressed. Readers will gain increased knowledge about qualitative research and greater competency in evaluating this type of research. The hope is that food and nutrition professionals will be inspired to conduct and publish qualitative research, adding to the body of peer-reviewed dietetics-related qualitative publications. This type of research must be methodically planned and implemented with attention to validity, reliability, and relevance. This rigorous ap-

proach boosts the probability that the research will add to the scientific literature and qualify for publication.
J Am Diet Assoc. 2009;109:80-90.

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To many food and nutrition professionals the term *research* elicits thoughts of data, numbers, measurement, controls, controlled environments, reliability, randomized clinical trials, interventions, and outcomes. Epistemologists refer to this as quantitative research (1-3). It is well suited to testing the effectiveness of interventions, evaluating outcomes, mining statistical associations, and elucidating the effects of risk factors. When phenomena are not easily measured, processes must be evaluated, knowledge is limited about a culture, or reasons must be discerned for outcomes a different approach is warranted.

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Manuscript accepted: September 19, 2008

Manuscript accepted: September 19
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0002-8223(09)10901-00\$25.00/0
doi: 10.1016/j.jada.2008.10.015

CHARACTERISTICS OF QUALITATIVE RESEARCH

Qualitative research produces findings not derived from standard statistical procedures or other means of quantification. It is defined as a naturalistic approach that seeks to understand phenomena in uncontrolled, context-specific settings (1,4). For example, suppose a clinical trial using a university-based cardiovascular risk reduction program tailored for African-American men was highly effective in reducing risk factors. When the pro-

80 Journal of the AMERICAN DIETETIC ASSOCIATION

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