

Chapter 17. Summary of Behavioral Research

The Research Enterprise

Your Skills as a Researcher

**Your Skills as a Critical Consumer of Research and Research-related
Information**

A Final Word

The Research Enterprise

We learn about our world in many different ways. Much of what each of us knows is the result of personal experiences, our everyday interaction with the world. However, there is also much we know that we have not experienced directly. People, particularly authority figures (parents, teachers, ministers, etc.) share information with us. At other times, we learn through a rationalist approach, in that we take pieces of existing knowledge and, often using logic, derive new ideas about the world. Finally, much of what we know about our world is based on empiricism. The empirical approach emphasizes the importance of testing ideas or hypotheses by making systematic observations. Although we informally use this latter approach during our normal course of experiencing the world, the research enterprise provides a more formal, systematic, and objective prescription for learning about our world. This scientific approach to obtaining knowledge is not perfect and there is value in all approaches. However, it is a very powerful method that leads to much confidence in the conclusions that we draw.

As you know, the scientific approach can be applied to many disciplines of study, including biology, astronomy, physics, geology, etc. The use of the scientific method to better understand human behavior is both valuable and fascinating. It is one thing to be able to predict the movement of a planet. It is another to predict the behavior of a person. Human behavior is so complex; there are so many variables that interact to result in even a simple act or a simple thought. Other ways of knowing (personal experience, authority, rationalism) can only provide so much understanding about human behavior. In fact, other ways of knowing often provide misunderstanding and misconceptions about human behavior. An empirical approach using the scientific method is designed to avoid misunderstanding and is truly the foundation of the discipline that we call psychology. It truly is fascinating that we, as behavioral scientists, have used our thoughts and behaviors to develop methods for better understanding our thoughts and behaviors. We are using the very processes that we seek to understand.

As we embark on behavioral research to better understand ourselves, there are limits to what we can do and we must always consider how research participants are treated. Attention to ethical issues is amplified by some research in the past that was improper. The Tuskegee Syphilis Study involved giving men a disease without their consent and later withholding treatment. The Milgram shock studies put participants in a position where they believed that they were delivering harmful shocks to another person. The Zimbardo Prison Study resulted in a situation in which participants who assumed the role of prison guards exhibited degrading treatment of other participants who assumed the role of prisoners.

The field of behavioral research has learned much about ethical treatment from these studies and others. The American Psychological Association now has very clear ethical guidelines for the treatment of

both human and nonhuman research participants. For human research, the guidelines emphasize proper informed consent of participants, deception only when necessary, and the general guide that no participants should feel degraded or mistreated in any way. For animal research, the guidelines emphasize proper care of animals, proper housing, and the use of methods to reduce any pain and suffering. The use of animals in research will continue to be a hotly debated issue. We each have our own position on this issue and we should each have a right to have our own position. However, each of us should be responsible enough to be informed regarding the arguments on all sides of the issue so that our position is an informed position and not a position guided by misconceptions.

Your Skills as a Researcher

In this book, you have been introduced to the fundamentals of behavioral research. These fundamentals begin with asking research questions. We get interested in a particular area of psychology, we learn about that area and what other researchers have done, and we develop testable questions that we believe will add to the existing knowledge. These questions can be answered using either experimental, quasi-experimental, or nonexperimental research designs.

As you have seen, the experimental designs are the most powerful in that they lead to cause-effect conclusions. The experimental designs begin with the expression of research questions as hypotheses. These hypotheses make predictions about how people (or animals) should behave given a particular set of circumstances and clearly identify the variables to be studied. The independent variable is the one that is manipulated by the researcher and the dependent variable is the one that is observed for possible changes. As you would expect with the scientific method, these variables must be measured. Numbers must be assigned to different levels of each variable. These numbers exist on a particular scale of measurement (nominal, ordinal, interval, or ratio) and, as such, provide different types of information about the variable. For many variables, measurement requires observation of behavior.

Measurement and observation are particularly important issues in psychological research because we are often dealing with fuzzy concepts like aggression, intelligence, memory, love, etc. Observations can be made in different ways. The researcher may be a participant observer or a nonparticipant observer and there are advantages and disadvantages to each. Observations often occur on a particular schedule and can involve measures of frequency, duration, and/or intervals. Measurements made by equipment (e.g., computers) are often very reliable as long as you ensure that the equipment is calibrated and working properly. However, measurements made by human observers are susceptible to differences in criteria and the presence of bias. Thus, human observations should be assessed for reliability by using multiple

observers and calculating the inter-observer agreement of observations. This technique provides some level of confidence that you are indeed observing and measuring what you believe that you are observing and measuring.

As you realize by now, most of the research questions that we ask in psychology involve questions about a very large number of individuals (e.g., all children, everyone with depression, all humans) and it is not possible to collect data from all of those individuals. Thus, we must collect data from samples of the population. We strive for samples that are representative of the population and we have learned about sampling techniques that help achieve this goal. The advantages of random sampling were emphasized and the methods of stratified random sampling, convenience sampling, and quota sampling were also discussed.

When we examine the data collected from samples, we are interested in the nature of the variability in the scores obtained. We predict that some of this variability in scores will be systematic variance due to manipulation of the independent variable. But we also understand that some of the variability in scores is likely the result of systematic error (confounding variables) and random error. These sources of error are due to extraneous variables in the research and originate from the participants, the experimenters, and/or the method used. The presence of extraneous variables makes it more difficult for us to see any effects of the independent variable on our dependent variable. Thus, one of our major goals in conducting behavioral research is to design and control the experimental situation in ways that reduce extraneous variability. By doing this, we increase both the internal and external validity of our research.

The use of these control techniques is the hallmark of experimental research. The good researcher knows that extraneous variables can creep in at every step of the research process. Researchers can control extraneous variables through the experiment setting, consent, instructions, sampling techniques, assignment techniques, observation techniques, measurement techniques, interactions with participants, and the use of research designs with proper control groups. The research design may involve independent samples, correlated samples, designs with more than one independent variable, or designs that study a single participant over time. The use of the experimental techniques permits the researcher to test cause-effect hypotheses and to make cause-effect conclusions. To be able to understand whether one variable causes changes in another variable is the most powerful type of information that we can learn in behavioral research.

Although not as powerful, quasi-experimental and nonexperimental research designs also provide valuable information that increases our understanding of psychology. Quasi-experiments are nearly identical to true experiments with the exception that participants are not randomly assigned to the experimental conditions. Because of this, the potential presence of extraneous variables makes cause-effect

conclusions risky. Nonexperimental designs can include correlational designs, ex post fact designs, naturalistic observation, and qualitative research. Nonexperimental designs are usually selected when the independent variable cannot be manipulated by the researcher or should not be manipulated for ethical reasons. Correlational designs simply measure different variables to determine whether any relationship, either positive or negative, exists between or among them. Ex post facto designs focus on potential differences between groups in which the independent variable is not manipulated by the researcher and the different groups already exist. Naturalistic observation provides real-world descriptions of behavior in situations where the researcher has little or no control over the environment. Qualitative research is based on the insights that psychologists gain by interacting with individuals. Each of these research methods can be used to add important information as we continue on our journey to better understand ourselves.

Equipped with these tools, you may decide to go into a research-related field. University professors conduct both basic and applied research. The federal government hires researchers to evaluate federal programs and to conduct behavioral research in the military. State governments also hire researchers to evaluate state programs. Businesses and large corporations hire researchers to address issues like personnel selection, employee satisfaction, management structure, effective advertising/marketing of products, and characteristics of consumers. In fact, there are some companies whose mission is to conduct research (e.g., companies that conduct surveys and polls for clients).

Even if you do not enter a career that is research-related, you may be able to apply research techniques to a career that normally does not take advantage of research to provide important information. For example, you may own or work for a business that is trying to decide whether advertising for customers in the local paper is cost effective. Is the extra income generated greater than the advertising costs? Instead of a subjective assessment or a poorly designed assessment with data, you could utilize a time series design. For example, you could record advertising expenses and income over a four-month period, during which you only advertise during months 2 and 4. You could then plot your income (minus advertising expenses) across the four months to determine whether adjusted income is higher during months when you advertise. This is just one example. There are so many possibilities for research methods to increase the effectiveness of decision-making. You now have the fundamental skills to do this. When you market yourself to potential employers, make sure that they know you have these skills.

Your Skills as a Critical Consumer of Research and Research-related Information

No matter what you do in life, you will be constantly exposed to research-related information. This type of information is pervasive. You experience it in college classes, in business meetings, in the newspaper, in all types of magazines, on the nightly news, on a variety of other television programs, on the radio, on internet sites, and in conversations. Much of this information is good, some is mediocre, and much is just crap! To become a more educated and informed citizen, you need to be a critical consumer of this type of information. The “Thinking Critically ...” section in each chapter of this book provided you with examples of everyday information that required critical evaluation. You now have the fundamental skills to ask the right questions and do your own evaluations. We hope and expect that you will.

A Final Word

We know that research design concepts are a challenge to learn and that many may not be as interesting as learning about people with psychological disorders. We understand that a course in research design is often the 2nd least anticipated course in the psychology curriculum (we know which is 1st – Statistics!). Therefore, we congratulate you on your completion of this course.

We hope that we presented the concepts clearly, provided interesting and informative examples, increased your appreciation of behavioral research, helped you become a more critical consumer of information, and perhaps increased your interest in conducting research in the future. You truly have learned many important concepts and skills in this book. We wish you the best of luck in the future.

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