

# Introduction to Research Methods

**A**s a psychologist, the entire framework behind learning about psychology is being able to study human behavior. Not everyone will ultimately conduct research for a career, but in order to understand human behavior, we must have an appreciation for the research process and experimental design to better understand how to critically evaluate research results. By nature, we are all consumers of information, and understanding research design will help broaden your ability to interpret and critically analyze research no matter what your career choice is. As you begin to embark on your journey through a research methods course with the end goal of a career in academia, practice, or research, there are probably a lot of questions that come to mind. Every time a new research methodology class begins or someone consults with a new client to solve a problem, we always ask, Why do we conduct research or what does research methodology mean to you? The simple answer to this is “to learn things or solve a problem” or “to advance science and practice through control and innovation.”

After completing a course in research methodology, you may be left with a feeling that all that was accomplished in the course was a laundry list of different concepts and topics with little connection or relevance to the real world or that this textbook will make an excellent paperweight. However, this couldn't be further from the truth, because in some capacity (whether scientifically controlled or simply through observation), research is conducted every day. In a scientifically controlled **experiment**, a researcher may desire to understand the impact that an **independent variable** has on a **dependent variable**. In other words, in an experiment, a researcher develops a **hypothesis** or **research question** and then implements an

**experiment:** A specific research design consisting of manipulating an independent variable and measuring a dependent variable

**independent variable:** A variable in research that is manipulated or changed

**dependent variable:** A variable in research that is measured

**hypothesis:** A scientific prediction that is suspected to occur in a study based on previous research findings

**research question:** A question developed based on a problem where limited knowledge or research exists

intervention (i.e., the independent variable) that is designed to have an effect on a specific outcome (i.e., the dependent variable). The complexity of an experiment is up to the discretion of the individual conducting the experiment.

## RESEARCH PROCESS

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Conducting research for the first time is a very time consuming iterative process to validate and replicate results. While we may all want to save the world with a grand idea, consider the resources and time you have to conduct and evaluate research. You may not be able to solve all the problems at work, but there is always a solution to a problem. Through proper planning and critical thinking, you can create a well thought out research study. The major advantage to having a thorough understanding of research design is that it is possible to know any potential issue that may arise prior to conducting an experiment. Therefore, researchers are aware of and can prevent many of the problems before they become issues. This is where proper planning and critical thinking before conducting research is imperative. These problems, as you will learn soon, are threats to the **validity** of the results. Think about it for a minute. How would you like to have the ability to know any potential problem you would encounter and how to fix it before it actually happens? You may be thinking that this is not possible, but we can assure you that this is possible. After reading this book and understanding research design and threats to validity, you will be able to improve the validity of conducting research at work or critically evaluating existing research results to better understand how to interpret research.

Throughout this book, we bring you through the complexities of research methodology with a focus on applying science with practice to foster your understanding of research methodology or enhancing your skills to evaluate existing research. In other words, we provide you with the steps, tools, and knowledge to develop a well thought out and high quality research design or evaluate an existing study. In addition to our expertise, we weave together examples from problems faced by current practitioners and how these examples relate to research design in order to bridge the gap between science and practice. These examples provide reinforcement of the research methodology concepts within this text-

book and insight into what problems organizations may be currently facing. We provide you with a foundation of the importance and practicality that a solid research design has on delivering valid and reliable results.

Research methodology would not be complete without an in-depth discussion of **reliability** and validity. Besides, reliability and validity are the crux of conducting quality research, and we believe in the importance of knowing these concepts in detail because the link between reliabil-

ity and threats to validity with research design is not always clear. Therefore, we have intertwined threats to validity with various research designs as well as the trade-offs of validity threats. Essentially, validity and their associated threats are discussed in their

**validity:** The accuracy of the results of a research study

**reliability:** The extent to which a measure in a study is consistent, dependable, precise, or stable

own chapters and throughout this book to provide a clearer understanding of how these components operate and a direct link to how they impact research design.

This next statement is going to be a recurring theme that you may hear multiple times! No matter what the selected research design is, the only limitation between what you want to do and what you actually get to do is dependent upon your own creativity and ability to reduce validity threats, aside from concerns of ethics and constraints of time and resources. Creating a study is relatively simple, but defining how to do it thoroughly while maximizing validity and reliability is the challenge. Before venturing into the world of research, it is expected that there is a certain level of understanding about research. With that said, this chapter is aimed at providing a general overview of concepts and topics that you should be familiar with. Should some of these concepts be unfamiliar, definitions and examples are provided along the way to enhance and reinforce your understanding of the terminology.

## RESEARCH AND EXPERIMENTS

We conduct research to learn about a topic or to seek answers to a question. In order to be able to answer these questions, we must conduct experiments, which fall into four broad categories:

1. Experimental Research Design (Chapter 7) – Involves the manipulation of an independent variable to determine the effect on a dependent variable where participants are randomly assigned.
2. Quasi-Experimental Research Design (Chapter 8) – Involves the manipulation of an independent variable to determine the effect on a dependent variable where participants are not randomly assigned.
3. Nonexperimental Research Design (Chapter 9) – Utilizes primary analysis, secondary analysis, or meta-analysis to describe data, examine relationships or covariation between variables, and compare groups.
4. Survey Research Design (Chapter 10) – Utilizes experimental, quasi-experimental, or nonexperimental designs to study a cause and effect relationship or examine relationships between variables through the use of a survey/questionnaire.

Each one of these categories has advantages and disadvantages, which are discussed in their own respective chapters. The purpose of conducting research/experiments and evaluating existing research is to better understand a phenomenon of interest. As we reflect on our education, teaching experience, and applied experience, the one statement that is always a topic of discussion revolves around predicting behavior.

Have you ever been told or heard that the best predictor of future behavior is past behavior? This statement is the result of conducting research! Many researchers have explored this very phenomenon in an effort to be able to predict future behavior. When examining past research on predicting behavior, Tolman (1946) was interested in predicting behaviors for incarcerated individuals being given probation. Approximately 60 years later, the topic of

**meta-analysis:** A nonexperimental research technique utilizing statistics to compare and contrast various articles on a particular topic

predicting behavior is still being researched today! Helzer and Dunning (2012) were interested in examining future aspiration versus past achievement. To aggregate multiple research studies on a similar topic, Ouellette and Wood (1998) conducted a **meta-analysis** to examine a variety of past studies to determine what factors may influence this past behavior–future behavior relationship. The purpose of

a meta-analysis is to review multiple studies on a given topic to statistically analyze a theme that emerges from these studies and recommend future areas of research.

The process of conducting or evaluating research is important because research is continually evolving and changing over time. A few applied organizational topics that could be researched using the past behavior–future behavior link are as follows:

1. A recruiter is interested in examining the extent to which biodata on an application form predicts future behavior (Mael, 1994; Yan, Wu, & Zhang, 2010).
2. Understanding how using personality variables can predict future job performance (Barrick, Mount, & Judge, 2001).
3. A retail organization wanting to know if asking customers about future behavior would impact the likelihood of repeating past behavior (Chandon, Smith, Morwitz, Spangenberg, & Sprott, 2011).

Each one of the above problems can be answered through one of the four main categories of research. The only limit to conducting research is your own creativity to design a study.

Throughout our lives, we will always encounter situations and problems that may not have a clear answer. This is where research can help! Research methodology is a science that is critical to know and understand, but the limited creativity and numerous concepts can be confusing and overwhelming. One of the main problems with learning about research methodology is that the light bulb rarely goes on or is so dimly lit that there is no real understanding of what was supposed to be learned and why. Therefore, we provide an in-depth discussion of research methodology with a focus on real-world application to bridge the gap between science and practice while intertwining the nuances of research design and the impacts on validity to provide you with the tools to conduct and evaluate research.

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## HOW WE LEARN

As human beings, we desire to learn new ways of doing something or understanding why we learn things in an effort to explain a phenomenon of interest. This inquisitive nature may lead to the question, How do we learn things? Now you get the idea! Research methodology is about acquiring new knowledge or advance existing knowledge to solve a practical problem. When determining an effective solution to a problem, there are two different ways of arriving at a conclusion. **Induction** and **deduction** are two types of

**Box 1.1** Induction and Deduction

Induction – Using common sense as a way of learning. For example, what does it mean to know what common sense is to someone, and how do we know it is common sense? Zhao (2009) conducted a study examining the use of common sense for management decision making.

Deduction – Utilizing logical reasoning and/or current knowledge as a way of learning. For example, students attend school to learn about and master the material required to complete a degree. The challenge is when a student uses what they learned in school to apply on the job because the transition from textbook to practice may be difficult (Le Maistre & Pare, 2004).

reasoning a researcher/practitioner can use to approach a problem.

Through these methods of learning, researchers can begin to understand and explain behavior in a meaningful way that may lead to specific questions. These questions then lead a researcher to create a solution as to how to answer these questions. Maybe it is just us, but have you ever wanted to know why someone engages in one behavior and someone else engages in a different type of behavior? Through conducting research, we can begin to learn about behaviors and provide a framework to understand the implications of these behaviors to predict how someone may react in a given situation.

As part of inductive reasoning, a researcher/practitioner reviews the existing literature to better understand what previous researchers have done to explore the phenomenon of interest. Upon reviewing the relevant literature, the researcher/practitioner begins to develop a specific question that can be addressed through research. Then the experiment is conducted, and results are analyzed to determine if the current experiment supports the original question of interest. As part of deductive reasoning, a researcher/practitioner can take the results of an experiment or an observation then come up with a tentative explanation as to why these results occurred and refer to the literature or theory to assist in explaining this observation. Regardless of the type of reasoning used to arrive at a result, the results and findings can lead to the development of different theories that provide the scientific and practitioner community with ways to address a phenomenon of interest.

**induction:** Using common sense as a way of learning

**deduction:** Using logical reasoning or current knowledge as a way of learning

**BASIC VERSUS APPLIED RESEARCH**

Prior to beginning the discussion on different research designs, within the realm of research, there are many different types of research designs, categories of research, and multiple ways to solve a problem. It is important to take a step back and examine different

categories of research. The first phase of thinking about research is to understand what category of research you are conducting. There are two main categories that research can fall into: **basic research** and **applied research**. Basic research applies when questions are developed that aid in understanding the fundamental process of behavior or why something is done. The goal is not necessarily to create new knowledge but rather provide an understanding of existing knowledge, theories, or behaviors. Once a researcher has enough knowledge to understand a phenomenon of interest, then basic research may in turn drive applied research experiments. Applied research is conducted to solve problems that are dealt with on an everyday basis. More specifically, applied research is utilized to predict a phenomenon of interest and how someone would behave in a given situation.

**basic research:** Type of research where questions are developed to understand the fundamental process of a phenomenon

**applied research:** Type of research conducted to solve a problem that occurs on an everyday basis

### Box 1.2 Practitioner Spotlight: Basic Versus Applied Research

A recent conversation with a fellow colleague led to the discussion of a potential problem within an organization by implementing a solution through utilizing basic and applied research. While this particular practitioner did not think in terms of basic versus applied research, we pulled out the nuances between the two and thought this would be a good example to highlight the differences between research categories.

The surrounding problem within this particular organization was a result of high turnover in one particular department. The organization utilized a two-step approach to solve the problem. One approach we deem as basic research because the purpose was to provide a more thorough understanding of why the turnover existed. The other approach was applied research because the organization wanted to solve the problem of turnover and determine an intervention that would result in decreasing turnover.

- **Basic Research** – The first approach was through the use of basic research. To better understand why there was a high degree of turnover in this department, the organization development team utilized focus groups to further understand the existing behavior in an attempt to better understand why the turnover was high. The overall purpose of this focus group was to conduct a gap analysis between employees to determine any training opportunities that may exist. After completing the focus groups, it was determined that there was a disconnect between management and employees. This disconnect was a result of a lack of knowledge and skill that employees were required to have in order to be successful in their current position. This qualifies as basic research because the intention was to understand the why there was a high degree of turnover rather than try to fix the problem.
- **Applied Research** – The second approach to this turnover problem was through utilizing the results of the focus group to develop a four day leadership training program aimed at providing theoretical knowledge and practical application to efficiently and effectively lead a department. The program began with a thorough assessment of the leader and the team

through various tools that evaluate the current leader. The remaining days of the training program involved a hands-on approach to solve practical problems through integrating theoretical concepts with application. The purpose of this leadership training program was to enhance the skill level of management and reduce turnover. This is an applied research project because the intention was to provide the management team with the knowledge and skills on how to be successful in a given situation in the future.

## SCIENTIFIC METHOD

With an understanding of the two main categories research falls into, the next step is to begin the process of how to conduct research. Researchers have long relied on a concept known as the scientific method to execute an idea. The scientific method is a common means to conduct research. It is a cyclical methodology of conducting research that is comprised of the following seven steps:

1. Identify the problem
2. Utilize research to understand the problem
3. Create a hypothesis or research question
4. Design a methodology for conducting the research
5. Collect the data and analyze results
6. Interpret findings and draw conclusions
7. Report findings or revisit the hypothesis/research question starting at step 3

The first step in beginning the process of conducting research involves thinking of a potential problem that you want to provide an answer to. After a problem of interest is identified, the next step is to examine the literature in detail to ensure you have a clear and thorough understanding of the research and how variables are defined. At this step of the research process, you may only have an idea, which then becomes a starting point for further exploration. Keep in mind that the question or hypothesis may change while reviewing previous literature, which is a normal process of refining your initial idea.

When conducting and analyzing your own research, you may find yourself venturing down a different path than what you originally started with. This is part of the process of determining an appropriate research design. Once the experiment is conducted, it is also important to remember that despite our best efforts to develop a hypothesis, the results may or may not be statistically significant findings. While the goal is to find statistically significant results, not finding significant results is also as important as finding significant results. There will always be something to learn from a study, whether it is learning from mistakes in the current experiment to construct a better quality research design or learning about a different approach to a problem. For purposes of this textbook, we review the scientific method up to step 3 with the remaining Chapters 7 to 10 focusing on step 4 and the data collection of step 5. Chapter 11 discusses briefly the analysis of data in step 5 and step 6, Chapters 12 and 13 bridge the gap between science and practice and introduce tradeoffs to research design, and Chapter 14 discusses reporting your findings.

## CHAPTER SUMMARY

- Conducting and evaluating research is a complex iterative process that focuses on designing a study that is both reliable and valid.
- Research can fall into four main categories: experimental design, quasi-experimental design, nonexperimental design, and survey research.
- As a means to learn about a phenomenon, induction and deduction are two ways that can be used. Induction is when you use common sense as a way of learning, and deduction is when you use logical reasoning or current knowledge as a way of learning.
- When conducting research, basic and applied research are the two main categories. The purpose of basic research is to provide an understanding of existing knowledge, and applied research is used to predict a phenomenon of interest or how someone would behave in a given situation.
- The scientific methodology is an overarching cyclical framework that utilizes a series of seven steps to conduct research.

## DISCUSSION QUESTIONS

- How would you utilize the concepts of induction and deduction to develop two similar study designs that measure the same dependent variable?
- Compare and contrast basic and applied research and how both can be utilized in organizational settings.
- Develop a research design that follows the seven steps of the scientific method that you could implement in an applied setting.

## CHAPTER KEY TERMS

Deduction  
Experiment  
Experimental Design  
Hypothesis  
Induction

Meta-Analysis  
Nonexperimental Design  
Quasi-Experimental Design  
Reliability  
Research, Applied

Research, Basic  
Research Question  
Survey Research Design  
Validity